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Date of request	Expected receipt of	document ##	7/14/9
Document number	Date of document_	1954-1958	
Title and author (if documen Radioactivity Analysis	t is unnumbered) Report Woc Dauly		
This section to be complete	ed by Document Center)	· · · · · · · · · · · · · · · · · · ·	
Date request received	7/1/96		······
Date submitted to ADC	7/11/96		
Date submitted to HSA Coord	linator 7/1/96		
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Date submitted to CICO	7/11/96	18 g	
Date received from CICO	7/16/96	·	
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Date document received			
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RADIOACTIVITY ANAYSIS REPORT (White Oak Creek Daily)
(1955 - 1958)

Carbide and Carbon Chemicals Corporation Operating Contractor for the U.S. Atomic Energy Commission.

This document has been approved for release to the public by Tarkelley

Technical Information Office Oak Ridge K-25 Site Date

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# RADIOACTIVITY ANALYSIS REPORT

File I	No	K-1	004-B-114,	RC	
Issue	d	1-1	6-59		
			Vater		

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-273	1/5/59	7115 ±	Per 100 ml. water
	±	<u>±</u>	
	±	±	
	<u>±</u>	<u>+</u>	
	±	±	
	±	<u>+</u>	
	±	±	
	±	±	
	<u>+</u>	+	
	±	±	
	<u>±</u>	±	
	±	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	<u>+</u>	
	±	<u>+</u>	
	<u>+</u>	<u>±</u>	
	± ±	<u>±</u>	
	<u> </u>	±	
	±	<u>±</u>	
	±	±	
	±	±	
	<u>±</u>	±	
	±	±	

- 1. The limit of error at the 95% certainty level has been estimated from the precision of control samples.
- 2. The alpha counting rates have been corrected to 50% geometry by comparison of results obtained by counting unaltered uranium with the published alpha specific activity.
- 3. The beta counting rates have been corrected to 100% geometry by comparison of results obtained by counting unaltered uranium with the published specific beta activity of normal uranium.



APPROVED: a R Hynn -2-

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#### RADIOACTIVITY ANALYSIS REPORT

File No. K-1004-B-114, RC Issued 1-8-59 Type of Sample Water

ro: Mr. Bech	er		
Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-272	12/23/58	21,460 <u>.</u>	
	<u>+</u>	±	
,	±	±	
	<u> </u>	±	
	<u>+</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	±	
	<u>±</u>	± .	
	<u>±</u>	±	
	±	±	
	±	±	
	±	<u>+</u>	
	±	<u>±</u>	
. <u> </u>	±	±	
	<u>+</u>	<u>+</u>	
	<u>+</u>	+	
	<u>±</u>	<u> </u>	
	<u>±</u>	±	
	<u>+</u>	<u>±</u>	
	±	±	
	±	<u>+</u>	
	±	<u>+</u>	
	±	±	

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APPROVED: AR Flynn

File No.	K-1004-B-114, RC
Issued_	12-23-58
	Sample Water

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-271	12/15/58	14,642±	
	. <u>±</u>	<u>+</u>	
	±	±	
	<u>±</u>	±	
	±	±	
	<u>±</u>	<u>+</u>	
	<u>±</u>	±	
	±	±	
	±	±	
1	±	±	
	±	±	
	<u>±</u>	±	
	<u>±</u>	±	
	±	<u>±</u>	-
	<u>±</u>	<u>+</u>	
	±	±	
	±	<u>±</u>	
	± ±	<u>±</u>	
	±	±	
	±	±	
	<u>±</u>	±	
	<u>±</u>	±	
	±	±	

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APPROVED: a.R. J-lynn -4by L.S. Lucte



File No. K-1004-B-114, RC

Issued 12-4-58

Type of Sample Water

TO: Mr. Becher

Sample.	Alaba	Beta	
Sample Number	Alpha Cts/min.	Cts/min.	Remarks
HPK-25-270	11/24/58	8894 #	Per 100 ml.
	±	±	
	<u>±</u>	±	
	±	±	
	±	±	
	± .	± .	
	<u>±</u>	±	
	±	±	
	<u>+</u>	<u>±</u>	
	±	±	
	<u>±</u>	<u>+</u>	
	±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	<u>±</u>	<u> </u>	
	<u> </u>	<u>±</u>	
	<u> </u>	±	
	±	±	
	±	<u>±</u>	
)	±	±	

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APPROVED: Al Hymr

File No.	K-100	4-B-114,	RC	
Issued_	11-20	<b>-</b> 58		
Type of		Water		

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-269	<u>+</u> :	13540 ±	Date of songle
	±	<u>+</u>	sonple battle
	±	<u>±</u>	abu has no
	±	<u>+</u>	endicate date
	±	±	N.B. Schnetz lag
			indicate period
	±	± ,	ad 11-20-58.
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	±	
1	±	±	
	±	<u>±</u>	
-	±	<u>±</u>	
	±	±	
	±	<u>±</u>	
	±	±	
	<u>+</u>	±	
	±	±	
	±	±	
	±	±	
	±	±	
		±	
	± .		
	<u>+</u>	<u>±</u>	
	±	±	

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APPROVED: AR Flynn

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#### RADIOACTIVITY ANALYSIS REPORT

File No. K-1004-B-114, RC

Issued 10-24-58

Type of Sample Water

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK <b>-</b> 25 <b>-</b> 268	9/26/58	8957 ±	Per 100 ml. water
	±	<u>+</u>	
	±	±	
	±	±	
	±	±	
	±	<u>+</u>	
	±	±	
	±	±	
	±	<u>+</u>	
,	<u>+</u>	<u>+</u>	
	±	<u>+</u>	
	<u>+</u>	<u>+</u>	
	±	<u>±</u>	
	<u>±</u>	<u>+</u>	
	<u>+</u>	±	
	±	±	
	±	±.	
	±	±	
	±	±	
	±	±	
	±	±	
	<u>±</u>	±	
	±	±	

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APPROVED: AR Flynn

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# RADIOACTIVITY ANALYSIS REPORT

File No.	K-1004-B-114, RC
rite No	9-30-58
Type of S	ample Water

m. Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-267	9/12+/58	12,489±	per 100 ml. water
	<i>† †</i> ±	<u>+</u>	
	<u>+</u>	<u>±</u>	
	<u>+</u>	<u>+</u>	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	± .	
	±	<u>±</u>	
	<u>+</u>	<u>±</u>	
	<u>+</u>	±	
<b></b>	<u>±</u>	± ±	
		<u>+</u>	
	<u>±</u>	<u> </u>	
	±	<u>±</u>	
	<u>±</u>	± .	
	土	± ±	
	<u>±</u>	±	
	± ±	±	
	±	±	
	±		
	±	+	

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APPROVED: a & Flynn

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# RADIOACTIVITY ANALYSIS REPORT

File No.	K-1004-B-11	4, RC
	9-12-58	
	Sample Water	

TO: Mr. Becher

IO: Mr. Decir		Betα	
Sample Number	Alpha Cts/min.	Cts/min.	Remarks
HPK-25-266	8/28/58	12,672 <u>+</u>	Per 100 ml.
	, , ±	±	
	±	<u>+</u>	
	± .	<u>.</u>	
	± 1	±	
	<u>+</u>	±	
	±	±	
	±	±	
	±	± .	
	±	±	
	±	±	
	<u>+</u>	±	
	<u>+</u>	±	
	<u>+</u>	±	
	±	<u>±</u>	
	±	<u>±</u>	
, et	± 1	, <u>±</u>	
	±1,24	<u>+</u>	
	±	±	
	<u>+</u>	. ±	
	<u>±</u>	±	
	<u>+</u>	±	
	±	±	

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APPROVED: aR Hymn

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File No. K-1004-B-114, RC Issued

Type of Sample Water

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-265	±	12,572	per 100 ml.
	±	±	·
	<u>±</u>	<u> </u>	
	<u> </u>	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	±	
	±	±	
	±	±	
	±	<u>±</u>	
	±	±	
	±	<u>±</u>	
	±	<u> </u>	
	<u>±</u>	<u>+</u>	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	<u>+</u>	±	
	<u>+</u>	±	
	±	±	
1	±	±	

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APPROVED: af Flynn

-10-

K-1004-B-114, RC File No.\_ Issued\_ Type of Sample Water

TO · Mr Recher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
PK-25-264	7/34/58	23,033±	per 100 ml. wate
111-11-11		± ±	FOREN
	± .		358 2
	<u>±</u>	± - ;	PHYSIGS / 47
	<u>±</u>		- 1 (1) (2) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1
	+	±	A STATE OF THE STA
	<u>±</u>	±	
	<u>±</u>	±	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	<u>+</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>+</u>	
	<u>±</u>	<u>±</u>	
	<u>+</u>	<u>±</u>	
	±	<u>±</u>	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	±	±	

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K-1004-B-114, RC File No.\_ Issued\_\_ Type of Sample Water

Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-263		50,663±	1/1/-1
11111-27-207	<u>±</u>		1/1/15
	<u>±</u>	<u>±</u>	
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
	<u>±</u>	±	
	±	±	
	±	<u>+</u>	
	<u>+</u>	±	
	<u>±</u>	<u>+</u>	
	±	±	
	<u>+</u>	<u>+</u>	
	±	<u>±</u>	
	<u>±</u>	±	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	

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APPROVED: a R Alynn 8749 -12-

File No	K-1004-B-114, RC	
Issued_	7. R CR	_
	Sample Water	

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks	
HPK-25-262	±	23,483	per 100 ml.	
	±	±		
	±	±		
	±	<u>±</u>		
	<u>±</u>	±		
	<u>±</u>	±		
	±	±		
	±	±		
	±	<u>±</u>		
	· ±	±		
	±	<u>±</u>		
	±	<u>±</u>		
	±	±		
	±	±		100
	±	<u>±</u>		
	土	<u>±</u>		ľ
	±	±		1
	<u>±</u>	±		
	±	±		
	±	±		
	±	±		
	±	±		
·	±	±		

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APPROVED: AR Flynn

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K-1004-B-114, RC File No.\_ 6-11-58 Issued \_\_\_ Type of Sample Water

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-261	±	12,527±	
	<u>+</u>	±	
	±	±	
	±	<u> </u>	
	±	±	
	±	±	
	±	±	
	± `	±	
	±	±	
	±	±	
1	±	±	
	<u>±</u>	±	
	±	±	
	±	<u> </u>	
	±	±	
	±	<u>±</u>	
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	±	±	·
	±	±	
	±	±	
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	±	±	
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File No. K-1004-B-114, RC | 5-16-58 | Ype of Sample Water

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-260	5 / L±CX	8578 ±	Per 100 ml.
	/ / <sub>±</sub>	<u>±</u>	
	±	<u>±</u>	
	<u>+</u>	<u>+</u>	
	±	±	
_	<u>±</u>	±	
· · · · · · · · · · · · · · · · · · ·	<u>+</u>	±	
	±	±	
	<u>±</u>	<u>+</u>	
\	±	±	
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
<u></u>	<u>±</u>	<u>+</u>	
·	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
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·	±	<u>±</u>	
	±	±	
	±	<u> </u>	
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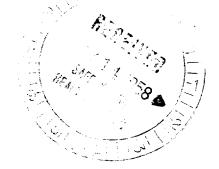
APPROVED: AR Flynn -15-

File	No.	<u>K-10</u>	04-B-114.	RC	
		5 <b>-</b> 13		-	
		Sample			

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-259	7/24:3	4265 ±	per 100 ml.
	/ / ±	±	
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>+</u>	
	<u>+</u>	±	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	<u>+</u>	±	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	<u>+</u>	±	
	±	±	
	土	<u>+</u>	
	<u>+</u>	±	
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	<u>±</u>	±	
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APPROVED: aR Flynn -16-

File No.	K-1004-B-114
Issued	4-25-58
Type of S	ample <u>Water</u>

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remárks
HPK-25-258	<u>±</u>	11,736 ±	+11/2
	<u> </u>	±	
	<u>±</u>	±	
	<u>±</u>	±	
	±	±	
	±	<u>±</u>	·
	±	<u>+</u>	
	±	±	
	<u>±</u>	<u>+</u>	
	±	±	
	<u>±</u>	±	
	<u>+</u>	<u>±</u>	
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	±	±	
	<u>±</u>	±	

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APPROVED: AR Hynn

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# RADIOACTIVITY ANALYSIS REPORT

File No. K-1004-B-114, RC Issued 4-18-58

Type of Sample Water

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
PK-25-257	±	12,672 <u>+</u>	Per 100 ml
	±	±	
	<u>±</u>	<u>±</u>	
	<u>±</u>	±	
	±	±	
	<u>±</u>	±	
	±	±	
	±	±	
	±	<u>+</u>	
	±	±	
•	±	±	
	<u>±</u>	<u>±</u>	
	<u>+</u>	±	
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: :	土	<u>±</u>	
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	±	±	

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3. The beta counting rates have been corrected to 100% geometry by comparison of results obtained by counting unaltered uranium with the published specific beta activity of normal uranium.

....

APPROVED: a R Flynn

File No	K-1004-B-114, RC	
Issued	4-8-58	
_	ample Water	

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
ĭ{ HPK-25-256	<u>±</u>	6639 ±	Per 100 ml.
	±	±	
	±	±	
	±	<u>+</u>	
	±	±	
	±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	±	
	±	±	
	± ±	<u>±</u>	
	±	±	
	<u>±</u>	<u>±</u>	
	<u></u> ±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	<u> </u>	
	±	<u> </u>	
	±	±	
	±	±	

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5

APPROVED: AR Hynn

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File No. K-1004-B-114, RC
Issued 3-27-58
Type of Sample Water

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-255	<u>±</u>	9,562±	Per 100 ml.
	±	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	<u>+</u>	
	±	±	
	± _	±	
·	<u>±</u>	<u>+</u>	
	<u>±</u>	±	
	<u>+</u>	±	
	<u>+</u>	<u>+</u>	
	<u>+</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	·
	±	±	
	±	±	
	±	±	
	±	±	
Ĺ	±	±	

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APPROVED: AR Hynn

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K-1004-B-114, RC File No.\_ 3-11-58 Issued\_\_

Type of Sample Water

	TO: Mr. Be		* * <sup>1</sup> / <sub>2</sub>	_
£	Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
8	HPK-25-254	±	51 <b>1</b> 4 ±	per 100 ml.
		±	±	
;		<u>+</u>	<u>+</u>	
		<u>±</u>	<u> </u>	
		<u>±</u>	±	
		<u>±</u>	±	
		±	<u>+</u>	
		, <u>±</u>	±	
		<u>±</u>	±	
	<u> </u>	`±	±	
	ļ	±	<u>±</u>	
		±	<u>±</u>	
		<u>±</u>	<u>±</u>	
		<u> </u>	<u>±</u>	
		±	±	
		<u>±</u>	± ±	
		±	<u>+</u>	
		±	<u>±</u>	
		±	<u> </u>	
		·±	±	
		±	±	
		± ±	<u>±</u>	
		±	土	

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- 2. The alpha counting rates have been corrected to 50% geometry by comparison of results obtained by counting unaltered uranium with the published alpha specific activity.
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RADIOACTIVITY ANALYSIS REPORT File

File No. K-1004-B-114, RC Issued 2-20-58

Type of Sample Water

TO. Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HP <b>K-</b> 25 <b>-</b> 253	<u>+</u>	4876 ±	per 100 ml.
	<u>±</u>	±	
	<u>+</u>	±	
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	±	±	
	<u>+</u>	±	
	<u>+</u>	±	
	±	±	
	±	±	
	±	<u>±</u>	
	±	±	
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	<u>+</u>	
	±	±	
	<u>±</u>	<u>±</u>	
	±	±	
	±	±	
	<u>±</u>	±	
	±	<u>±</u>	
	±	±	

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APPROVED: ar Hynn

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File No. K-1004-B-114, RC

Issued 2-6-58

Type of Sample Mater

CC

TO: Mr. Becher

TO: Mr. Becher				
Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks	
HPK-25-252	±	5485 ±	Per 100 ml.	
	<u>+</u>	±		
	<u>±</u>	<u>+</u>		
	<u></u>	±	·	
	±	±		
	±	±		
	±	±		
	± ·	<u>+</u>		
	<u>±</u>	±		
	±	±		
	±	· ±		
	<u>±</u>	±		
	±	±		
	<u>±</u>	± ±		
	±	<u>±</u>		
	±	<u>+</u>		
	±	<u>±</u>		
	±	<u> </u>		
	±	<u>±</u>		
	±	<u>±</u>		
	±	±		
	±	<u>±</u>		
	±	±		

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APPROVED: AR Hym

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#### RADIOACTIVITY ANALYSIS REPORT

File No. K-1004-B-114, RC
Issued 1-31-58
Type of Sample Waterh

TO. Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-251	<u>±</u>	9054 <u>+</u>	Per 100 ml. water
	<u> </u>	± ***	
	±	<u>±</u>	
	±	<u>±</u>	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	±	±	
	±	<u>+</u>	
	· ±	<u>+</u>	
	±	±	
	<u>±</u>	<u>±</u>	
	±	<u>+</u>	
	· ±	±	
	±	±	
	±	±	
	±	±	
	±	. <u>+</u>	·
	±	±	
	±	±	

- 1. The limit of error at the 95% certainty level has been estimated from the precision of control samples.
- 2. The alpha counting rates have been corrected to 50% geometry by comparison of results obtained by counting unaltered uranium with the published alpha specific activity.
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APPROVED: A Flynn

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File No. <u>1-1004-B-114, RC</u>

Issued <u>1-20-70</u>

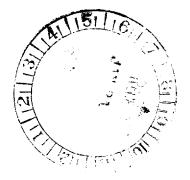
Type of Sample <u>Der</u>

TO: 12. Section

Pate 1

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
EPII-05-250	<u>+</u>	5420 ±	Per 100 ml. weter
	<u>±</u>		
	<u>+</u>	±	
	<u>+</u>	±	
	±	±	
	±	土	
	±	±	
	± `	±	
	±	<u>+</u>	
	<u>+</u>	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	±	
	<u>±</u>	±	
	±	±	
	<u>+</u>	±	
	±	±	
	±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	±	<u>±</u>	
	±	±	
	±	±	

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APPROVED: al Hynn

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File No	<u> 7-1004-3-114, 73</u>	
Issued_	·	
Tune of	Sample	

TO. Macher

		Ni Or	
Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
EEK-52-5/10	±	4539 ±	
	±	<u>±</u>	
	±	<u>±</u>	
-	±	<u>±</u>	
	<u>+</u>	<u>+</u>	
	<u>+</u>	<u>±</u>	
	±	±	
	±	<u>±</u>	
	<u>±</u>	±	
· · · · · · · · · · · · · · · · · · ·	<u>+</u>	. ±	
	±	±	
	<u>±</u>	<u>+</u>	
	<u>+</u>	±	
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	±	
	<u>+</u>	<u>±</u>	
	±	± .	
,	<u>+</u>	±	
	±	<u>+</u>	
	<u>±</u>	<u>+</u>	
	±	<u>±</u>	
•	±	±	

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APPROVED: al Hynn

File No. 11-1004-B-114, RC

Issued 12-27-57

Type of Sample 558

TO: Im. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
IPK-25-248	±	8271 ±	
	±	± `	
	<u>+</u>	±	
	±	±	
	±	±	
	±	±	
	<u>±</u>	±	-
	± '	±	
	±	<u>+</u>	
	±	±	
	<u>±</u>	±	
	±	<u>±</u>	·
	±	±	
	±	±	
	±	±	1
	±	<u>±</u>	O
	±	<u>+</u>	
	±	<u>+</u>	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	

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APPROVED: aR Hynn -27-

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### RADIOACTIVITY ANALYSIS REPORT

File No. K-1004-B-114, RC

Type of Sample Water

TO: Ir. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-247	±	7062 ±	11.77
	±	±	<u> </u>
	<u> </u>	±	
	±	±	
	<u>±</u>	· ±	
	±	<u>+</u>	
	±	<u>±</u>	
	±'	<u>±</u>	
	±	<u>+</u>	
· .	<u>±</u>	±	
	± .	±	
	<u>±</u>	±	
	±	±	
	<u>±</u>	<u>.</u>	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	<u>+</u>	
	±	±	
	±	±	
•	+	±	

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APPROVED: al Flynn

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Hill Fill

### RADIOACTIVITY ANALYSIS REPORT

TO: Ihr. Becher

186

27

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-246	±	4278 ±	
	±	±	
	±	±	
	±	±	1 (Files )
	<u>±</u>	±	
	±	±	·
	±	±	
	± ,	±	
	±	±	
	±	±	
	±	±	·
	<u>.</u> ±	±	
	±	±	
	±	±	
	±	±	·
·	±	±	
	±	±	
·	<u>±</u>	±	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	-

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APPROVED: APPROVED:

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File No. Issued\_ Type of Sample\_\_\_\_\_ter

TO. Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
PK-25-245	±	9789±	
	<u>.</u> ±	±	
	±	<u>±</u>	
÷	<u>+</u>	<u>+</u>	
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	±	±	·
	<u>±</u>	±	
	±	± .	·
	<u>+</u>	<u>±</u>	
	±	±	
	±	<u>±</u>	
	±	±	
	<u> </u>	±	•
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	

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APPROVED: P. R. Kuch for a. R. Flynn

File No.	K-1004-B-114, RC	
	11-6-57	_
	Sample Tater	_

TO: Mr. Becher

Sample Number	Älpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-244	± .	17723±	
·	±	±	
	±	±	
	<u>.</u> <u>±</u> .	±	
	±	<u>+</u>	
	±	±	
	±	±	
	± '	±	
	±	<u>+</u>	
	± .	<u>+</u>	>
·	±	±	
	. ±	±	
	± .	<u>±</u>	
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	±	±	

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APPROVED: All Flynn -31-

File No. <u>H-1004-B-114, RC</u>
Issued <u>10-22-57</u>
Type of Sample ter

TO: Br. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-243	±	10204 ±	
	<u> </u>	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
1	±	±	
	±	±	1.
	±	±	
	±	±	
	±±	±	
	±	±	
	±	±	
,	± ±	±	
	±	±	
	±	±	
	±	±	
	±	±	
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•	±	±	

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APPROVED: aR Flynn

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Type of Sample (1) a

TO: Mr. Beeher.

ر برغ	Sample 1 Number	Alpha Cts/min.	Beta Cts/min.	Remarks	1.	The limi
A.1,199	40K-25-24	2 ±	10,047	per 100 ml wat	r	certaint mated fr control
		<u>±</u>	±			Control
		±	<u>±</u>		2.	The alph
		±	±			been cor by compa

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it of error at the 95% ty level has been estirom the precision of samples.

ha counting rates have rrected to 50% geometry arison of results obtained by counting unaltered uranium with the published alpha specific activity.

3. The beta counting rates have been corrected to 100% geometry by comparison of results obtained by counting unaltered uranium with the published specific beta activity of normal uranium.

APPROVED: AR Hynn -33-

Type of Sample\_

pt TO: Mr. Becker Sample Number Alpha Beta Remarks Cts/min. Cts/min. ± ±  $\pm$ ±  $\pm$  $\pm$ ± ± Ŧ,  $\pm$ ± ±  $\pm$  $\pm$  $\pm$ ± ± ± ± ± ± ± ± ± Ŧ ± + ± ±  $\pm$ ±

±

±

- 1. The limit of error at the 95% certainty level has been estimated from the precision of control samples.
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K-1004-B-114 File No. Issued\_ Type of Sample\_

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-240	±	10,396 <u>+</u>	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	± ·	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	<u> </u>	±	
	±	±	
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	±	±	
	±	<u> </u>	
<u> </u>	. ±	<u> </u>	
	±	±	
	±	±	
	±	±	
•	±	±	

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#### RADIOACTIVITY ANALYSIS REPORT

File No. K-1004-B-114, RC
Issued 9-6-57
Type of Sample Ster

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-239	<u>±</u>	7076 ±	Per 100 ml. water
-	<u>+</u>	±	
	<u>+</u> .	±	
	<u>+</u>	<u>+</u>	
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	±	
	± '	±	
	±	±	
	±	<u>±</u>	
	<u>±</u>	±	
	±	±	
	±	±	
- Made de la Constantina del Constantina de la Constantina del Constantina de la Con	±	±	
	±	<u> </u>	
	<u>±</u>	±	
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
	±	<u>+</u>	
	±	±	
-	±	±	
	±	±	
	±	±	

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- 3. The beta counting rates have been corrected to 100% geometry by comparison of results obtained counting unal tered with the published

normal uranium

PROVED: ac Hynn

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File DH

#### RADIOACTIVITY ANALYSIS REPORT

File No. K-1004-B-114

Issued 8-27-57

Type of Sample Vater

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-238	<u>±</u>	5,895 ±	
	±	±	
	±	±	
	<u>±</u>	<u>±</u>	
	±	±	
	±	±	
	±	±	
	± .	±	
	±	±	
	±	±	
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	±	± ±	
· · · · · · · · · · · · · · · · · · ·	±	±	
· · · · · · · · · · · · · · · · · · ·	±	±	
	±	±	
	<u> </u>		

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APPROVED: Al Flynn

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Hold Sell Gagne Gale

File No. K-1004-B-114

Issued 0-14-57

Type of Sample Weight

AUG 15

To: Mr. Bacher

o: lir. Bach			1 .	Control of the Contro	
Sample Number	Alpha Cts/min.	Beta Cts/min.		Remarks	
HPK-25-237	±	14,463±			>-
	<u>+</u> .	±			
	±	±			
	<u>±</u>	±			
	±	±			
	±	±			· · · · · ·
	±	±			<u>.</u>
. !	± ,	± .	<u> </u>	-	· · · · · · · · · · · · · · · · · · ·
	±	±			
	±	.±		·	
	<u>±</u>	±			
	. <u>±</u>	ν±			
	±	±			
	<u>±</u>	± ±			
	±	<u> </u>			
	<u>±</u>	<u>±</u>			
	<u>±</u>	<u>±</u>	-		
	±	±			
	<u>+</u>	<u>±</u>			
-	±	±		··	
	±	·± .			
	<u>±</u>	±			
	±	. ±			

- The limit of error at the 95% certainty level has been estimated from the precision of control samples.
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- 3. The beta counting rates have been corrected to 100% geometry by comparison of results obtained by counting unaltered uranium with the published specific beta activity of normal uranium.

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APPROVED: W. Hymn

File No	K-1004-B-114
Issued_	7 31 57
Type of	Sample later

TO: Mr. Becher

Sample Number	Alpha Cts/min.	Betα Cts/min.	Remarks
HPK <b>-</b> 25 <b>-</b> 236	<u>±</u>	15,036±	
	± .	<u>±</u>	To an analysis of the second
	±	<u>±</u>	14
	<u> </u>	<u>+</u>	
·	; ±	±	
	±	±	
	±	±	
	± '	±	
	<u>+</u>	±	
	±	±	
	±	<u>±</u>	
	. ±	<u>±</u>	
	±	±	
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	<u>.</u> ±	
	<u>±</u>	±	
	±	±	
	±	±	

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APPROVED: al Hymn

-39 -

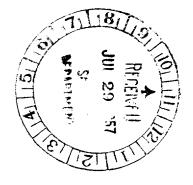
The File

File No.	912J	4
Issued_	7 <b>-</b> 26 <b>-</b> 5 <b>7</b>	
Type of	Sample Matter	_

TO: Mr. Becher; K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-235	±	17040 <sub>±</sub>	
	<u>+</u>	<u> </u>	
	土	±	
	±	<u> </u>	tan
	±	±	
	±	±	
	±	±	
	±	<u>±</u>	
	±	<u>+</u>	
	±	±	
. •	<u>±</u>	<u>±</u>	
	. ±	<u>±</u>	
	<u>+</u>	<u>±</u>	
	<u>+</u>	<u>±</u>	
	<u>±</u>	±	
	±	±	
	±	± ±	
	<u>±</u>	<u>+</u>	
	±	<u>±</u>	
	±	±	
<u></u>	±	±	
	±	±	
	±	±	

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APPROVED: Al Hynn

-40-

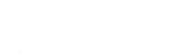
File No.		
Issued_	7-9-57	
Type of	Sample Sater	

TO: Mr. Becher; K-1004-B-114. RC

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28/57	
, ,	l

Sample Number	Alpha Cts/min.	Betα Cts/min.	Remarks
HPK-25-234	<u>±</u>	11895 ±	
	<u>±</u>	<u>+</u>	
	<u>±</u>	±	
	±	<u>±</u>	
	· ±	±	
	土	· · <u>+</u>	
	±	±	
	± `	±	
	±	±	
	土	±	
	<u>+</u>	±	·
	. * ±	±	
	±	<u>+</u>	
	±	±	
	±	±	
	±	± ±	
	<u>±</u>	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	

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APPROVED: P. R. Kuchn
for a.l. Flynn

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#### RADIOACTIVITY ANALYSIS REPORT

File No.	9 <b>1</b> 2J
Issued	6-12-57
Tune of Sample	Teter

TO: 10 Becher: K-1004-B-114, BC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks FOFIVE
HPK-25 <b>-232</b>	±	15,208	
	±	±	A COMPANY
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	± '	<u>+</u>	
	±	. ±	
	±	, ±	
,	<u>±</u>	±	
	±	<u>+</u>	
	±	<u>±</u>	
	<u>±</u>	±	
	±	<u>.</u>	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	± .	±	
	±	±	
	±	±	
	±	±	

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APPROVED: AR Hymn

## J. Alliel

#### RADIOACTIVITY ANALYSIS REPORT

File No.	9 <b>1</b> 2J	
Issued	6-7-56	_
Type of Sample	ater	

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-206	<u>±</u>	7445 ±	
	±	±	
	<u>±</u>	±	
	±	±	
	±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	±	±	
	±	<u>±</u>	
	±	±	
	<u>±</u>	±	
	±	<u>+</u>	
	±	±	
	<u>±</u>	<u>±</u>	
	±	<u>±</u> .	
	<u>±</u>	<u>†</u>	
	<u>±</u>	<u>±</u>	
	±	<u>+</u>	
	±	<u>±</u>	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	

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APPROVED: Willynn -43-

Hei GH File

File No. 912J

Issued 5-24-57

Type of Sample MEXICH Water

TO: Mr. Becher: K-1004-B-114. RO

Sample 7 Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-231	<u>±</u>	9761 ±	
	<u>+</u>	±	
	<u>+</u>	<u>+</u>	·
	±	<u>+</u>	
	±	±	
	±	<u>±</u>	
<u>.</u>	±	<u>+</u>	
	± '	±	
	±	±	
	±	±	
	<u>±</u>	±	
	±	<u>+</u>	
	±	<u>+</u>	
	<u> </u>	) ±	
	±	<u>+</u>	
	土	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	± ±	
	±	±	
	±	±	
	±	±	
-	±	± .	

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APPROVED: AR Hym

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To: Mr. Becher; K-1004-B-114

#### RADIOACTIVITY ANALYSIS REPORT

This GH

File No.		9 <b>1</b> 2J
Issued		6-21-57
Type of S	Sample	Tater

	Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
$\left  \cdot \right $	/ HPK-25-233		16952-±	Şv <sup>≥</sup>
		±	± 1	
		±	±	
	·	<u>+</u>	±	
		<u>+</u>	±	
		±	<u>±</u>	
		±	±	
***		±.	<u>+</u>	
		<u>±</u> .	±	
		±	±	
		土	<u>+</u>	
		. ±	±	
		±	±	
		±	<u>±</u>	
		<u>±</u>	<u>+</u>	
		±	<u>±</u>	
		±	±	
		±	±	
		±	±	
		±	· ±	
		±	±	
		±	±	
9		+	+	· ·

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File No. 912J Issued 5-10-57

Type of Sample Water

TO: Mr. Becher; K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-230	<u>±</u>	9190 <u>+</u>	Non Inco
	±	<u>±</u>	
	<u>+</u>	<u>.</u> <u>±</u>	
	<u>±</u>	<u>±</u>	
	<u>+</u>	±	
	±	±	
	±	<u>±</u>	
	±.	±	
	±	±	
	±	. <u>±</u>	
	±	<u>+</u> ·	
	±	±	
	<u>±</u>	±	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
<u></u>	±	±	
	±	<u>+</u>	
	±	. ±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	

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APPROVED: IR Shynn

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#### RADIOACTIVITY ANALYSIS REPORT

File No. 912J

Issued 4-24-57

Type of Sample Water

TO: Mr. Becher: K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-229	±	8004 <sub>±</sub>	
	±	±	
	<u>+</u>	±	
	±	±	
	± .	±	
	±	<u>+</u>	
	±	±	
	± ·	±	
	±	±	+ ( <sup>3</sup> ) \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
:	±	±	2
	±	±	
	±	±	
	±	±	
	<u>.</u> ±	<u>+</u>	han in the same of
	±	±	
	±	±	
·	±	±	
·	±	<u>±</u>	
	±	±	
	<u>+</u>	±	
	±	· ±	
	±	±	

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APPROVED: A R Flynn

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#### RADIOACTIVITY ANALYSIS REPORT

File No. 9/2
Issued 4-10-5-7
Type of Sample Water

TOT 1. Becker; K10043-114 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
WP-K-25-22	8 ±	883±1	
	±	<u>±</u>	
	±	±	
	± ±	<u>±</u>	
	±	±	
	<u>±</u>	±	
	±	±	
	± ' ·	±	
	<u>±</u> .	. <u>±</u>	
	·±	±	
	±	±	
	<u>±</u>	<u>†</u>	
	± ±	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	±	
	±	<u>+</u>	
	±	±	
	±	±	
	±	±	
	±	<u>±</u>	
	±	±	

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#### RADIOACTIVITY ANALYSIS REPORT

File No. 912J
Issued 3-14-57
Type of Sample Water

TO: Mr. Becher; K-1004-B-114, RC

Sale New,11

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks		
HPK-25-227	±	7030 ±	per 100 ml. water		
	±	±			
	<u>+</u>	±			
	±	<u>±</u>			
	±	±			
	<u>.±</u>	±	·		
	±	±			
	± `	±			
	<u>+</u>	±			
	±	±			
	±	±			
	±	<u>+</u>			
	±	. <u>±</u>			
	±	<u>.</u>			
	±	<u>+</u>			
	±	土	V.		
	±	±			
·	±	±			
	±	±	-		
	<u>±</u>	±			
	±	±			
	· ±	±			
	±	±			

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APPROVED: AR Hymn

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912J File No .. 3-12-57 Issued\_ Type of Sample\_ Water

Mr. Becher: K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
IPK <b>-</b> 25-226	±	14,147±	per 100 ml water
	±	<u>+</u>	
	<u>+</u>	±	
	±	<u>+</u>	
	±	±	
	土	±	
	±	±	
	±	±	
	±	±	
	±	±	
	<u>±</u>	±	
	±	±	
	±	±	
	±	±	
	±	<u>±</u>	
	±	±	
	±	<u>+</u>	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	·
	<u>±</u>	±	

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APPROVED: aR Hynn

Hile DA

File No. <u>912J</u>

Issued <u>2-26-57</u>

Type of Sample tter

TO: 12. Becher: K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
PN-25-223 PN-25-224 PN-25-225	±	5606 ±	
IPK <b>-</b> 25-224	± ·	4093 ±	
IPK-25-225	<u>+</u>	7702 ±	
	<u>+</u>	<u>+</u>	
	<u>±</u>	<u>±</u>	
	±	<u>+</u>	
	±	<u>±</u>	
	<u>+</u> `	±	
	<u>±</u>	±	
	±	±	
	±	±	
	. ±	±	
	±	±	
	<u>±</u>	±	
	<u>±</u>	±	
	<u>±</u>	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	

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APPROVED: A R Hymn

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The Dr

RADIOACTIVITY ANALYSIIS REPORT

File No. 9/2 J Issued - 25-57 Type of Sample water

10 Mr Becher 1004B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-222	±	6891	(91111)
	<u>±</u>	<u>±</u>	
·	±	±	
	±	±	
	<u>±</u>	±	
	<u>±</u>	±	
	±	±	
	<b>±</b> '	±	
	±	±	
	± .	±	
	±	<u>+</u>	
	±	±	
	±	±	
	±	±	·
	±	±	
	±	±	
	±	<u>±</u>	
	± .	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	<u>+</u>	

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PPROVED: AR Hynn

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#### RADIOACTIVITY ANALYSIS REPORT

File No	<u> </u>	
Issued_	1 15 57	
Type of	Sample ter	

TO: 32. Becher; M-1004-B-114, DC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-221		14,275±	
	±	±	
	±	±	
	±.	±	
	<u>±</u>	±	
	±	±	
	· <u>+</u>	±	
	±'	±	
	±	±	
	<u>±</u>	±	
	±	±	
	±	±	
	±	±	
	±	±	
	<u>±</u>	<u>+</u>	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
. , , , , , , , , , , , , , , , , , , ,	±	±	1
	± ±	±	
	+	+	

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APPROVED: al Hynn

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File No	912J
Issued	1-5-57
Tune of Sample	Cater

TO: 12. Becher; K-1004-B-114, AC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
IPK-25-220	<u>+</u>	12 <b>,</b> 115±	A
	<u>+</u>	土	
	±	±	
	±	土	
	<u>.</u>	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	<u>±</u>	<u>+</u>	
	<u>±</u>	±	
	±	<u>±</u>	
·	±	±	
	±	±	
	±	<u>±</u>	
	±	<u>±</u> .	
	<u>±</u>	± ,	
	±	±	
	±	±	
	±	±	
	±	<u>±</u>	
	±	±	

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APPROVED: a R Glymn

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#### RADIOACTIVITY ANALYSIS REPORT

File No. 912J

Issued 12-14-56

Type of Sample Mater

TO: Mr. Becher; K-1004-B-114, RC

Late	
Late De 3 1956	

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
IPK-25-219	±	12,179 <u>+</u>	
	<u>±</u>	±	
	<u>±</u>	±	
	±	±	
	±	±	
	±	±	
	<u>±</u>	±	
	<u>+</u> '	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	<u>+</u>	±	
	±	±	
	±	±	
	<u>±</u>	±	
	±	<u>±</u>	:
	±	±	<u> </u>

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APPROVED: A Hynn

1-Hills 2 - Flyne 3 - File

File No.	912J	
Issued_	30 7 5	
Type of	Sample <u>Mater</u>	

TO: Mr. Becher: K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-218	<u>±</u>	16,552 <u>+</u>	
	<u> </u>	± ±	
	± .	±	
	<u> </u>	±	
	±	±	
	±	±	
	±	±	
	± ,	±	
	±	±	
	±	±	
	±	±	
	±	±	
· · · · · · · · · · · · · · · · · · ·	±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
••••	.±	±	·
	±	±	
	±	±	
	±	±	

- The limit of error at the 95% certainty level has been estimated from the precision of control samples.
- The alpha counting rates have been corrected to 50% geometry by comparison of results obtained by counting unaltered uranium with the published alpha specific activity.
- 3. The beta counting rates have been corrected to 100% geometry by comparison of results obtained by counting unaltered uranium with the published specific beta activity of normal uranium.



-56-

APPROVED: AR Flynn

The

#### RADIOACTIVITY ANALYSIS REPORT

File No. 9125
Issued 11-9-56 30
Type of Sample 5500

TO: Mr. Becher; K-1004-B-114, Rd

Sample Number	Alpha Cts/min.	Betα Cts/min.	Remarks
Z HPK-25-217	±	18,243±	
	<u>.</u> <u>t</u>	±	
	<u>±</u>	<u>±</u>	
	<u>±</u>	. ±	
	<u>±</u>	±	
	±	±	
	,±	±	
	±	±	
	<u>±</u>	±	
	±	±	·
	±	±	
	±	±	
	±	±	
	<u> </u>	<u>+</u>	
	±	±	
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
	±	±	
	±	±	
	±	±	·
	±	±	
	±	<u>±</u>	
	±	±	

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- 3. The beta counting rates have been corrected to 100% geometry by comparison of results obtained by counting unaltered uranium with the published specific beta activity of normal uranium.

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APPROVED: <u>AC Hynn</u>

Har Sit

File No. 912J
Issued 10-23-56
Type of Sample Mater

TO: Mr. Becher; K-1004-B-114, RC

0/18/5	

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-216	±	10,800±	per 100 ml. water
	±	<u>±</u>	
	土	<u>.</u>	
	<u>±</u> .	±	
	±	±	
	±	±	
	±	±	
	± .	<u>±</u>	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	±	<u>±</u>	·
	±	±	
	±	<u>±</u>	
	±	±	
	±	±.	
	±	±	
	±	±	
	±	±	
	±	± **	
<u> </u>	±	±	
	±	±	
	±	±	
	±	± ±	
· · · · · · · · · · · · · · · · · · ·	± .	<u>+</u>	
	±	±	

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APPROVED: a R. Flynn

-58-

The Soft

File No. S12J
Issued 10-16-56
Type of Sample ter

TO: Mr. Becher; K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
Number HPK-25-215	<u>+</u>	12,925±	Per 100 ml. of wate
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	<u>+</u> ` .	±	
	±	±	
	± .	±	
	· ±	±	
	±	±	
	±	±	
	<u>+</u>	±	
	<u>±</u>	±	
	±	±	·
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	± ,	±	
	±	±	

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- 3. The beta counting rates have been corrected to 100% geometry by comparison of results obtained by counting unaltered uranium with the published specific beta activity of normal uranium.

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APPROVED: M Hymn

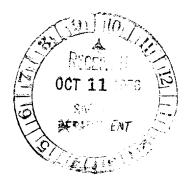
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File No.	<u>912J</u>	
Issued_	10-5-56	
Type of	Sample <u>Mater</u>	

To: Mr. Becher; K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-214	<u>±</u>	13 <b>,</b> 989±	Per 100 ml. of water
	<u>±</u>	±	
	<u> </u>	±	
	±	<u>±</u>	
	±	±	
	±	±	
	<u>±</u>	±	
	±'	±	
	<u>+</u>	±	
	±	±	
	±	<u>+</u>	
	±	<u>±</u>	·
	<u>±</u>	±	
	<u>±</u>	±	
	<u> </u>	±	
	<u>+</u>	<u>±</u>	
	±	±	
	±	±	4.4
	±	<u>±</u>	·
	±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	±	<u>+</u>	

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APPROVED: A & Flynn

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File No.	9120	
Issued_	9-20-56	
Type of	Sample <u>Water</u>	

TO: Mr. Becher; K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
4 HPK-25-213	±	12,902±	per 100 ml. water
	<u>±</u>	±	
	±	±	and the state of t
	<u>±</u>	<u>±</u>	
	<u>+</u>	±	
	<u>±</u>	<u>+</u>	
	±	±	
	± `	<u>+</u>	
	<u>±</u>	±	
	<u>±</u>	· ±	
	<u>±</u>	<u>+</u>	
	+	<u>±</u>	
	±	±	
	<u>±</u>	<u>±</u>	
· · · · · · · · · · · · · · · · · · ·	<u>±</u>	<u>±</u>	
·	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	±	4
	<u>±</u>	±	
	±	±	
	<u>±</u>	± ±	
	± ±	±	
)	±	±	

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APPROVED: OR Hymn

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How .

#### RADIOACTIVITY ANALYSIS REPORT

File No. 912U

Issued 9-7-56

Type of Sample Mater

TO: Mr. Becher; K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
IPK-25-212	· · ±	13027 ±	Per 100 ml. water
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>+</u>	
	±	. ±	
	±	<u>±</u>	
	±	. <u>±</u>	
	± `	±	
	±	±	
	±	±	
	±	±	
	±	<u>±</u>	
	±	土	
	<u>±</u>	±	
	<u>±</u>	, <u>,</u> ±	
	±	<u>±</u>	
	±	<u> </u>	·
	<u>±</u>	<u>±</u>	
	±	<u>+</u>	
	±	±	
	±	±	
	±	<u>±</u>	
	±	±	

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APPROVED: aR Hynn

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Site

#### RADIOACTIVITY ANALYSIS REPORT

File No. 912J
Issued 8-17-56
Type of Sample Water

To: Mr. Becher; K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-211	±	8384 ±	per 100 ml. water
	<u>±</u>	±	
	±	<u>±</u>	
	±	<u>±</u>	
	±	±	
	±	±	
	生	<u>+</u>	
	± '	<u>±</u>	
	±	<u>+</u>	
	±	±	
	±	<u>+</u>	
	<u>±</u>	±	
	±	<u>+</u>	
	<u>±</u>	±	
	<u>+</u>	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	<u> </u>	
	±	<u>±</u>	
	±	±	
	±	±	V.
	<u>±</u>	±	***

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APPROVED: Al Hynn

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Hell A

File No. 912J
Issued 8-10-56

Type of Sample Water

): Mr. Becher; K-1004-B-114, RC

X Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HP <b>K-</b> 25 <b>-</b> 210	<u>;</u> ; ±	8386 <u>+</u>	
	<u>±</u>	±	
	±	±	
	±	±	
·	<u>+</u>	±	
	<u>±</u>	±	
	±	±	
	± .	±	
	±	<u>±</u>	·
	<u>±</u>	±	· ·
	±	±	
	<u>+</u>	<u>±</u>	
	±	<u>+</u>	
	+	± ±	
	±	±	
	±-	±	
	±	<u> </u>	
	±	±	
	±	<u>±</u>	
	±	± ±	
	±	±	
	±	±	
i	±	±	

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APPROVED: al Hynn

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Joe Rhyan

File	e No	( <b>§</b> 12J	
	ued	7-20-56	
		unla Tater	

TO: Becher; K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-209	<u>±</u>	6733 ±	
	<u>±</u>	±	
	<u>±</u> .	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±.	<u>+</u>	·
	<u>+</u> .	<u>+</u>	
	<u>±</u>	±	
	<u>±</u>	±	
-	<u>±</u>	<u>+</u>	
	<u>±</u>	<u>+</u>	
	±	<u>±</u>	
	±	±	
	± .	± .	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	<u> </u>	
	±	±	
	±	±	
	±	±	

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APPROVED: al Alynn

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Hier 1954 Pilipin Inle

File No	o. 912J	_4
Issued	7 33 56	
Type o	f Sample <u>Tater</u>	_

TO: Mr. Becher; K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Betα Cts/min.	Remarks
PK-25-208	<u>+</u>	6733 ±	
	±	±	
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
	<u>.</u>	. ±	
	±	<u>±</u>	
·	±	±	
	± .	±	
	±	±	
	<u>±</u>	±	
	<u>±</u>	<u>+</u> .	
	. <u>±</u>	<u>±</u>	
	±	±	
	<u>±</u>	<u>±</u>	
	±	<u>+</u>	
	<u>±</u>	±	
	±	<u>±</u>	
	±	<u>±</u>	
	<u> </u>	±	
	±	±	
	土	<u>±</u>	
	±	±	
	±	±	

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APPROVED: aR Hymn

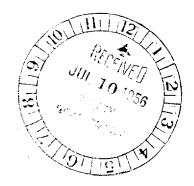
-66-

File No.	912J
Issued	7-5-56
Type of Sample	Cater

TO: Mr. Decher; M-1004-B-114, ...

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-207	±	7354 ±	per 100 ml. water
	±	±	
	<u>±</u>	±	
	<u>+</u>	<u>±</u>	
	±	<u>±</u>	
	±	<u>+</u>	
	±	<u>±</u>	
	±	<u>+</u>	
	. ±	±	
	<u>+</u>	±	
	<u>+</u>	±	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
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	±	<u>+</u>	
	<u>±</u>	±	
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	<u>±</u>	±	
	<u>±</u> .	±	,
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APPROVED: aR Flynn -67-

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#### RADIOACTIVITY ANALYSIS REPORT

File No.	912J	
Issued_	6-1-56	
Type of	Sample <u>Mater</u>	

TO: Mr. Becher; K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-205	±	7698 ±	per 100 ml. water
	±	<u>±</u>	
	<u>+</u>	<u> </u>	
	±	· ±	
	±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	±	±	
	<u>±</u>	±	
	±	±	
	±	±	
	<u>±</u>	<u>±</u>	
	±	±	
	<u>+</u>	<u>±</u>	
	±	±	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	±	
	±	<u>+</u>	
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	±	t ±	
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	±	±	

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PPROVED: Al Flynn

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Hack -

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### RADIOACTIVITY ANALYSIS REPORT

File No	9 <b>12J</b>	
Issued_	5 <b>-</b> 16-56	
	Sample Water	

TO: Mr. Becher; K-1004-B-114, RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
PK-25 <b>-</b> 204	±	5684 ±	per 100 ml. water
	±	±	
	±	<u>+</u>	
	±	±	
	<u>±</u>	±.	
	±	±-	
	±	<u>±</u>	
	± .	±	
	±	±	
	±	±	
1	±	<u>±</u>	·
	±	<u>±</u>	
	<u>±</u>	<u>+</u>	
	±	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	±	±	
•	±	<u>+</u>	
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	±	±	
)	±	土。	

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APPROVED: al Hypu

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File No. 912J
Issued 5-1-56
Type of Sample Water

TO: Mr. Becher; K-1004-B-114 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-203	±	4432 ±	
	<u>±</u>	±	
	<u>±</u> .	±	
	±	<u>±</u>	
	<u>±</u>	±	
	<u>±</u>	<u>+</u>	
·	<u>±</u>	<u>+</u>	
	±'	±	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
-	±	±	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	<u>.</u>	±	
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	±	±	
	±	<u>+</u>	
	±	±	
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APPROVED: Alynn

File No.	9 <b>12</b> J	
Issued	4-18-56	
Type of Sample	Water	

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
Number HPK-25-202	±	4967 ±	per 100 ml. water
	±	±	
	<u>+</u>	±	
	. ±	±	
	±	±	
	±	±	
	±	±	
	± `	±	
	±	±	
	±	±	
	±	± ;	
	· ±	±	
	±	±	
	<u>+</u>	±	
	<u>+</u>	<u>±</u>	
	±	±	
	<u>+</u>	<u>±</u>	
	±	±	
	±	±	
	±	±	
	±	±	
	±	· ±	
	±	±	

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Short

#### RADIOACTIVITY ANALYSIS REPORT

File No. 912J
Issued 4-5-56
Type of Sample Water

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-201	±	11,837±	
	±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	±	±	·
	<u>±</u>	±	
	±	±	
•	±	±	
	<u>±</u>	±	
	<u>+</u>	<u>±</u>	
	<u>+</u>	<u>±</u> .	
	<u>±</u>	±	
	土	±	
	土	<u>±</u>	-
	<u>±</u>	±	
	±	±	
	±	±	
·	±	±	
	±	±	
	±	± .	

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APPROVED: <u>Al Flynn</u>

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# 4- 50H

#### RADIOACTIVITY ANALYSIS REPORT

File No. 912J

Issued 3-23-56

Type of Sample Water

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Betα Cts/min.	Remarks
PK-25-200	±	6939 ±	per 100 ml water
	±	±	
	±	<u> </u>	
	±	<u>±</u> .	
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	±	
	± `	±	
	<u>+</u>	±	
	. ±	±	
	±	±	
	±	±	
	<u>±</u>	<u>±</u>	
	±	±	
	<u>±</u>	±	
	±	±	
	±	±	
	<u>.</u> ±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	±	±	

±

±

- The limit of error at the 95% certainty level has been estimated from the precision of control samples.
- 2. The alpha counting rates have been corrected to 50% geometry by comparison of results obtained by counting unaltered uranium with the published alpha specific activity.
- 3. The beta counting rates have been corrected to 100% geometry by comparison of results obtained by counting unaltered uranium with the published specific beta activity of normal uranium.



-73-

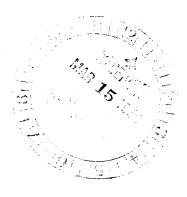
APPROVED: R Flynn

File No.	912J	
Issued_	3 <b>-</b> 13-56	
Type of	Sample Water	

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-199	±	4813±	per 100 ml. wate
	±	±	
	<u>±</u>	<u>+</u>	
	±	<u>±</u>	
	±	. ±	
	<u>±</u>	±	
	±	±	
	± '	±	
	±.	<u>±</u>	
	±	±	
	±	±	
	±	<u>±</u>	
	±	±	
	±	<u>±</u>	
	<u>±</u>	±	
	<u>±</u>	±	
	±	±	
	±	±	
	±	± _	
·	±	· ´ ±	
	±	±	
	±	±	· .
	±	±	

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APPROVED: W Thym

-74-

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File No.	912J
Issued	2-28-56
Type of Sample	Water

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	ample Alpha Beta Imber Cts/min. Cts/min.		Remarks	
IPK-25-198	<u>.</u>	6517 ±	Per 100 ml water	
	±	±		
	<u>±</u>	<u>±</u>		
	±	±		
	±	· ±		
	<u>+</u>	±		
	±	±		
	±.`	±		
	±	±		
	±	±		
	±	±		
	<u>±</u>	<u>±</u>		
	±	±		
	±	±		
	±	<u>.</u> ±		
	±	±		
	±	±		
·	±	<u>+</u>		
:	±	±		
	±	<u>+</u>		
	±	±		
	±	, ±		
	±	±		

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APPROVED: 12 Flynn

-75-

John Delle

File No. 912J
Issued 2-7-56
Type of Sample Health Survey

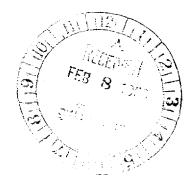
TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-196	±	10,550±	per 100 ml water
	±	<u>±</u>	
	±	<u>±</u>	
	±	<u>±</u>	
	±	±	·
	±	±	
	±	±	·
	± `	<u>+</u>	
	±	±	
	±	<u>±</u> .	
	<u>±</u>	±	-
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Filter Samples

- 2. The alpha counting rates have been corrected to 50% geometry by comparison of results obtained by counting unaltered uranium with the published alpha specific activity.
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APPROVED: Al Hynn

-76-

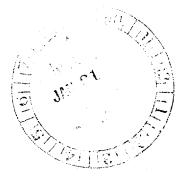
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File No	91 <b>2</b> J	
Issued_	1 <b>-27-5</b> 6	
Type of	Sample Water	

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-195	±	13,995 ±	per 100 ml. water
	<u>±</u>	±	
	· ±	<u> </u>	
`	<u>±</u>	<u>+</u>	
	±	±	
	±	±	
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	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
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	±	±	
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APPROVED: AR Flynn

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#### RADIOACTIVITY ANALYSIS REPORT

File No. 912J
Issued 11-29-55
Type of Sample Water

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample   Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-190		2 <b>4,</b> 429±	per 100 ml water
	±	±	
	±	±	
	±	±	
	<u>±</u>	±	
	±	±	
	±	<u>+</u>	
· · · · · · · · · · · · · · · · · · ·	ŧ,	±	
	<u>±</u>	±	
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	<u>.</u> ±	±	
	±	.±	
	<u>+</u>	±	
	±	<u>+</u>	
	±	±	
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	<u>±</u>	± ±	
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	±	±	

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APPROVED: ax Flynn

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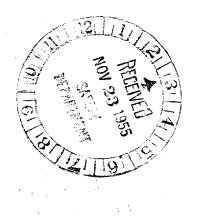
1- Fire

File No. 912J
Issued 11-18-55
Type of Sample Water

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
н <b>рк-</b> 25-189	±	14,938±	
	<u>±</u>	±	
	±	±	
	<u>+</u>	±	
	<u>±</u>	±	
	<u>±</u>	±	
	±	± .	
	± `	±	
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	<u>+</u>	± .	
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	±	±	
	<u>±</u>	<u>±</u>	
	±	<u>+</u>	
	±	±	
	±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	±	<u>+</u>	
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<b>)</b> .	±	±	•

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APPROVED: a R Flynn

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1- Hill SON 3- Fle

File No	9 <b>12</b> J	
Issued	11-1-55	
Type of Sample_	Water	

TO: Mr. Becher: K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
/ IPK-25 <b>-</b> 187	<u>±</u>	23,614±	
	<u>±</u>	<u>+</u>	
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	<u> </u>	<u>+</u>	
	<u>+</u>	<u>±</u>	
	±	±	
	<u>+</u> `	±	
	<u>±</u>	±	
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APPROVED: ac Hynn

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4	

File No	9 <b>12</b> J	
Issued_	102555	
Tune of	Woten	

To: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-186	<u>±</u>	19 <b>,</b> 627±	per 100 ml. water
	<u> </u>	±	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	±	±	
	<u>±</u>	<u>+</u>	
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	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>+</u>	
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APPROVED: a R Flynn

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#### RADIOACTIVITY ANALYSIS REPORT

File No. 9/2 J Issued 10-12-55

ToMa Bucher, K-1004 B-114, K-25 Re Type of Sample 766

1

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-195	<u>.</u>	8716	
	±	<u>+</u>	
	<u>+</u>	±	
	±	<u>+</u>	
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	<u>±</u>	±	
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	±	<u>±</u> .	
	. ±	<u>±</u>	
	<u>+</u>	±	
	±	±	
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	±	±	
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	. ±	±	
	±.	±	
	±	±	

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APPROVED: AR Hynn

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File No. 912J
Issued 9-29-55
Type of Sample Water

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-184	<u>.</u> ±	10,067±	
	<u>±</u>	<u>+</u>	
	<u>±</u>	<u>+</u>	
	<u>±</u>	±	
	<u>±</u>	±	
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	<u>±</u>	±	
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	<u>±</u>	± ±	
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	±	<u>+</u>	
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	<u>±</u>	±	

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APPROVED: AR Flynn -83-

SAH I Mile

#### RADIOACTIVITY ANALYSIS REPORT

File No. 912J
Issued 9-15-55
Type of Sample Water

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-183	±	11,925±	per 100 ml. water
	±	±	
	±	±	
	<u>+</u>	<u>±</u>	
	<u>+</u>	±	
	±	±	
	ı ±	±	
	± .	±	
·	±	<u>+</u>	
	± .	±	
	±	<u>+</u>	
	±	<u>±</u>	
	<u>±</u>	±	
	<u>±</u>	±	
	<u>±</u>	<u>.</u> ±	
	<u>±</u>	±	
	±	<u>+</u>	
	±	±	
	<u>±</u>	±	
	<u>+</u>	<u>±</u>	·
	±	±	
-	±	<u>+</u> .	
	±	±	

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APPROVED: al Flynn

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1- Hice Sok

File No. 912J

Issued 9-1-55

Type of Sample Water

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
¥ HPK-25-182	<u>±</u> ,	8013 ±	per 100 ml water
	<u>+</u>	±	
	±	±	
	土	±	
	±	±	
	± ±	±	
	±	±	
	± `	±	
	± ±	<u>±</u>	
	<u> </u>		
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
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APPROVED: AR Flynn -85-

1-760 1.4 2-72 hjæ 3-26

#### RADIOACTIVITY ANALYSIS REPORT

File No.	9 <b>12</b> J	
Issued	6 <b>-</b> 23-55	
Tuna of Sample	eter	

TO: Mr. Becher: K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
IPK <b>-2</b> 5-176	±	7243 ±	Per 100 ml water
	±	<u>±</u>	
	±	<u>+</u>	
	<u>±</u>	±	
	±	±	
	· ±	<u>±</u>	
<u> </u>	±	±	
***	±`	±	
	<u>±</u>	± ·	
	<u>+</u>	±	
	<u>.</u> ±	±	
	. ±	<u>±</u>	
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<del></del>	<u>±</u>	<u>±</u>	
·	± ±	. <u>±</u>	
	<u>+</u>	±	
	<u>±</u>	<u>±</u> .	
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APPROVED: a D Hymn

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File No	912J	
	6-17-55	
	Sample Water	

To: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-175	<u>+</u>	9346 ±	Per 100 ml. water
·	<u> </u>	<u>±</u>	
	±	<u>+</u>	
	<u>±</u>	<u>±</u>	
	<u>+</u>	<u>+</u>	
	<u>±</u>	±	
	±	<u>±</u>	
	± .	±	
	±	±	
	±	<u>+</u>	
	±	<u>+</u>	
	. <u>±</u>	±	
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	±	<u>±</u>	
	土	±	
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APPROVED: Rilen

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#### RADIOACTIVITY ANALYSIS REPORT

File No	<u>12.</u>	
Issued	5 16 55	
	Sample Water	

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HFK-25-172	±	6,804±	per 100 ml. water
	±	± ` `	
	<u>±</u>	<u>±</u>	
	<u>+</u>	±	
	<u>±</u>	±	
	±	<u>+</u>	
	<u>+</u>	±	
	± `	±	
	±	<u>±</u>	
	±	±	
	±	±	·
	±	±	
<u>, , , , , , , , , , , , , , , , , , , </u>	<u>+</u>	±	
-	<u>+</u>	<u>±</u>	
	<u>±</u>	± .	
<u>.</u>	<u>±</u>	±	
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APPROVED: al Flynn

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File Jak

File No. 912J
Issued 5-4-55
Type of Sample Water

TO. Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-171	<u>+</u>	10,798	per 100 ml. water
	±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	± .	±	
	. ±	± .	
	<u>±</u>	±	
	±	±	
	±	±	
	±	±	
	±	±	
	. <u>±</u>	<u>+</u>	
	<u>+</u>	±	
	<u>+</u>	<u>±</u>	
	±	±	
	<u>±</u>	±	
	±	±	
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APPROVED: aR Flynn -89-

Rhymatile

#### RADIOACTIVITY ANALYSIS REPORT

File No.	<u>ୀ2</u> J	
Issued_	1 05 55	
	Sample Water	

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-170	±	11813 ±	per 100 ml water
	±	<u>±</u>	
	±	±	i.
	<u>±</u>	<u>±</u>	
	<u>±</u>	±.	
	±	<u>±</u>	
	±	±	
	± '	±	
	±	<u>±</u>	
	±	±	
	±	<u>±</u> .	
	<u>+</u>	±	
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APPROVED: 18 Blynn

File.

#### RADIOACTIVITY ANALYSIS REPORT

File No. 1/22
Issued 4-19-55
Type of Sample Water

TOTOTA. Becker, K10048-114 K > 520

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
LPK-25-169	<u>+</u>	10,23±2	ver 100 ms. les
	<u>±</u>	±	4
	±	<u>±</u>	
	±	<u>±</u>	
	± .	±	
	• ±	±	
	±	<u>±</u>	
	± `	±	
	<u>+</u>	±	
	±	<u>±</u>	
	<u>+</u>	<u>+</u>	
	±	±	
	. ±	±	
	±	±	
	<u>±</u> .	<u>+</u>	
	±	±	
	±	±	
	<u>±</u>	±	
	±	±	
	±	<u>±</u>	
	±	±	
	<u>±</u>	±	
	±	±	

- The limit of error at the 95% certainty level has been estimated from the precision of control samples.
- 2. The alpha counting rates have been corrected to 50% geometry by comparison of results obtained by counting unaltered uranium with the published alpha specific activity.
- 3. The beta counting rates have been corrected to 100% geometry by comparison of results obtained by counting unaltered uranium with the published specific beta activity of normal uranium.



APPROVED: al Flynn

-91-

DA H 1

#### RADIOACTIVITY ANALYSIS REPORT

File No.	9 <b>12</b> J	
Issued_	4-7-55	
Type of	Sample Water	

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
-25 <b>-</b> 168	± .	12,717±	per 100 ml. water
	±	±	
	±	<u>±</u>	
	<u>+</u>	<u>±</u>	
	±	±	
	±	±	
	±	±	
	± `	±	
	<u>±</u>	±	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	<u>±</u>	±	
	±	±	
	<u>+</u>	±	
	<u>±</u> .,	±	
	±	±	
	±	±	
	±	±	

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APPROVED: a R Flynn

-92-

Rhym

File No	912J
Issued	3-18-55
Tune of Sample	Meter

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
IFK-25-167	<u>±</u>	10,65 <b>7</b> ±	per 100 ml water
	<u>±</u>	±	
	±	±	
	<u>±</u>	± ·	
	<u>±</u>	±	
	<u>+</u>	±	
	±	±	
	±	· ±	
	<u>+</u>	±	
	±	±	
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	±	±	
	±	±	
	±	±	
	±	±	
	<u>±</u>	<u>+</u>	
	±	±	
	±	±	
	±	±	
	. ±	±	

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- 3. The beta counting rates have been corrected to 100% geometry by comparison of results obtained by counting unaltered uranium with the published specific beta activity of normal uranium.

APPROVED: a R Hynn

-93-

DH -

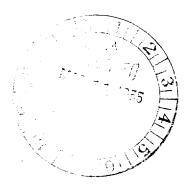
#### RADIOACTIVITY ANALYSIS REPORT

File No. 912J
Issued 3-10-55
Type of Sample Water

TO: Mr. Becher; K-1004-B-114, K-25 MC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
IPK-25 <b>-</b> 166	±	7431 ±	
	±	±	
	±	<u>±</u> .	
	±	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	±	
	±	±	
	± .	±	·
	<u>±</u>	±	
	±	±	
	±	±	
	<u>.</u>	<u>±</u>	
	±	±	
·	±	·±	
	±	<u>±</u>	
	±	±	
	±	<u>±</u>	
	<u>+</u>	±	
	± .	±	
	±	±	
	±	±	
····	±	±	
	±	±	

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APPROVED: aR Flynn

-94-

21/4 - - 1/A

#### RADIOACTIVITY ANALYSIS REPORT

File No. 912J

Issued 2-23-55

Type of Sample Vater

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-165	±	9 <b>3</b> 68 ±	
	<u>±</u>	<u>+</u>	
	<u>±</u>	<u>±</u>	
	<u>±</u>	±	
	<u>±</u>	±	
	±	±	
	±	±	
	±'	<u>+</u>	
	±	<u>+</u>	
	<u>±</u>	±	
	±	<u>±</u>	
	±	±	
	±	<u>+</u>	
	<u>±</u>	<u>±</u>	
·	±	±	
	±	±	
	±	<u>+</u>	
	±	±	
	±	±	
	±	±	
	±	±	·
	±	±	
	±	±	

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APPROVED: a R Hynn

- 95-

Estyl - Thee

#### RADIOACTIVITY ANALYSIS REPORT

File No	912J	
Issued_	2 <b>-</b> 11 <i>-</i> 55	
Type of	Sample <u>Water</u>	

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-164	<u>±</u>	8993 ±	
	±	<u>+</u>	
	±	±	
	± ·	<u>±</u>	
	±	±	
	±	±	
	±	±	
	<u>+</u>	±	
	<u>+</u>	±	
	±	±	
	±	±	
	<u>+</u>	<u>±</u>	
	<u>±</u>	<u>±</u> .	
	<u>±</u>	<u>±</u>	
	±	±	
	±	<u>±</u>	
	±	±	
	<u>±</u>	±	
	±	<u>±</u>	
	±	±	
	±	±	
	<u>+</u>	±	
•	±	±	

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APPROVED: al Flynn

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	File No	912J	
	Issued	1-31-55	
o. Mr. Becher; K-1004-B-114, K-25 RC	Type of Sam	ple <u>Water</u>	

TO: Mr.	Becher; K-100	+-B-114, K-25 I	7.U	
Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks	

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HFK-25-16 <b>3</b>	<u>±</u>	12 <b>,3</b> 50 ±	
	<u>±</u>	<u>±</u>	
	<u>.</u> ±	±	
	±	<u>±</u>	
	<u>±</u>	±	
	<u>±</u>	±	
	±	±	
·	± ·	<u>+</u>	
·	±	±	
	±	±	
	±	±	
	±	<u>+</u>	
	<u>+</u>	<u>+</u>	
	<u>+</u>	<u>±</u>	
	±	±	
	±	· ±	
	<u>+</u>	<u>±</u>	
	<u>±</u>	±	
	±	<u>+</u>	
	±	<u>+</u>	
	±	±	
	±	±	
	±	±	·

1. The limit of error at the 95% certainty level has been estimated from the precision of control samples.

912J

- 2. The alpha counting rates have been corrected to 50% geometry by comparison of results obtained by counting unaltered uranium with the published alpha specific activity.
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APPROVED: a R Flynn

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#### RADIOACTIVITY ANALYSIS REPORT

File No. 123
Issued 1-19-55
Type of Sample Tater

TO: Mr. Recher; K-1004-B-114, K-25 KC

Sample Number	Alpha Cts/min.	Betα Cts/min.	Remarks
HPK-25-162	<u>+</u>	8,822±	
	±	<u>±</u>	
	<u>+</u>	±	
	<u>.</u>	±	
	±	<u>.</u> ±	
	±	<u>+</u>	
	<u>±</u>	<u>+</u>	
	± ,	· . ±	
	<u>±</u>	<u>+</u>	
	±	±	
	· <u>+</u>	±	
	±	±	
	±	±	
	<u>+</u>	<u>+</u>	
	<u>±</u>	±	
	±	±	
	±	<u> </u>	
	<u>+</u>	±	
	±	<u>±</u>	
	±	<u>±</u>	
	±	±	·
	±	. <u>±</u>	
	±	±	

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APPROVED: A. C. Heym

-98-

RADIOACTIVITY ANALYS

912U

Health Survey Type of Sample

Filter Samples

TO: Mr. Bech	ner; K-1004-B-	114, K-25 RC	DEPARTMENT
Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarion 6
HP-18	9 ± √	±	
HP-19	5 ± 🗸	<u>.</u> ±	
HP-20	5 ± v	±	
HP-21	2 <u>±</u>	<u>±</u>	
HP-22	4 ± √	±	
√ HP-23	12 ±	<u>+</u>	
, HP-24	9 ±	±	
√ EP-25	4 ± ·	±	
нр-46	75552 ±	±	
HP-47	10561 <sup>±</sup>	±	
HP-48	274 ±	±	
HP-49	214 ±	<u>+</u>	
HP-50	46	<u>+</u>	
	<u>+</u>	<u>+</u>	
	<u>±</u>	±	
	<u>±</u>	±	
	±	<u>±</u>	
	±	± ±	
	<u>+</u>	<u>±</u>	
	±	±	
	<u>±</u>	±	
	<u>±</u>	±	
	±	±	

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APPROVED: a R Hynn

Day -

#### RADIOACTIVITY ANALYSIS REPORT

File No.	ા2ા	
Issued_	1-11-55	
Type of	Sample Cater	

TO: Mr. Becher: K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK <b>-</b> 25-161	±	937吐	
	±	<u>±</u>	, .
	±	±	
	±	<u>±</u>	
	±	± .	
	±	<u>±</u>	
	±	_ ±	
	± '	<u>±</u>	
	±	±	
	<u>±</u>	±	
	±	<u>±</u>	
	±	±	
<del>,</del>	±	±	
	. <u>±</u>	±	
	±	±	
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	±	±	
	±	±	
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	±	±	
	±	±	
	±	±	

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APPROVED: a R Hymn

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777				-					<b>V</b>
			WHITE	Oak La	AE.		16 HH 1	Hoec e	1-1
			54	mples.	522	t jadi			
				28 ml	•				
	71	Pafmin /33	al	900 1116					
HRK25 #	late			AU.					+
# <b>61</b>	1-15-52	25-2.4	4.9	2.45	- 2.45	2.45			+
11 62	H 6 700 00 1	5.1 - 5.4	10.5	5.25 /		<del></del>			
11 63	4-13-52	5.1-2.7	7.8	3.9					1
11 64	4-23-52	4.7-3.5	8,2	4.1					
4 65	4-30-52	7.4-7.9	15,5	7.65	20.90	5.22			
	5-12-52	9.5-9.2	18.7	9.35					<u> </u>
11 67	5-16-52	11-12	23.0	16.5					
11 68	5-21-52	8.7-9.6	18.3	9,15					1
11 69	5-28-52	17.1 -18.4	35,5	17.751	52.75	13.18		·	<u> </u>
	6-4-52		22.3	11,15)					
	6-12-52		16,3	8.15			·		—
	6-15-52		14.7	7.35					-
	6-25-52		11.5	5.65	32,30	8.07			-
- "74	7-8-52		10.0	5.05					+
	7-14-52		14.5	7.25					+
i	7-18-52		18.7	9.35		<b>.</b>			-
<u> </u>	7-23-52		13.2	6.6	28, 25	7.06			-
11 48	8-1-52	1111		11.951					+
11 79		17.3-14.2		15.75					+-
180		10.2-9.9	20.1		1070	17 +7			+
11 82		29.4.32.5 28.2-259		30.951 27.051	68.70	17.17			+
183	_	216-207		21.15		-			
** 84		16.5-16.1		16.30	6450	21.50			1
" <i>8</i> 5		14.7-13.7	74.0	acted	7	- GAI . U .			1
	10-18-52		+7	New sh	o o fe				<del> </del>
	10-16-52			cuti					1
" 88		17.5.16.8							1
_ ' 89	•	26.7-31.0	7				,		
	11-14-52								
91	27.4	5.5.4.8	7					_10	1
92		15.8-13.3	LIQUID COUNTING 2	sm/ sample	EVADORA	ted 100 m	1 50 Mple-	16,0210	m
93	12-12-52		1-	4 4/			1	31,753	c/
94	12-15-52	37-54	••	2 "	~_				
WCX-885 (Jan'48)	Y-12 DATA S	HEET			•				

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		İ		J-1. P. Sample	H.				
		1		SAMPI	es				
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•			1111						
					*-				
HPA Mailee	K-25-	SAMPLE	B c/m/38	m/				· · · · · · · · · · · · · · · · · · ·	
==	7	8/2/50 8/7/50	5.00, 2.33)						
	1.	•	3.00, 2.00						
8/25/51									
	10-5	9/4/50	5-60, 4.33						
9/8/		9/11/50	5.00, 4.00	/.00 , 2.20 , 3.0	0			· · · · · · · · · · · · · · · · · · ·	
1 /	7/50-7	9/18/50	2.60 2.70				·		
1	-150-8	10/9/50			,				
	3/50-9	10/16/50	2.53, 2.00						
1	26/50-10	1777	₹.,	) <u>(</u>	Combined Used in	cul of Hz	$r_1$ , $L_{-\infty}$	111/51	
	2/50-11	<i>y</i>	4.8 3.3	7.8	TI H.	L - 1	24-Da		
	4/50 - 12	12/4/50	<del>_ ( " ) </del>	0. <del>+3</del>	5-13 Nh	+PK-2K	= 1626 d/	the feller	7
	1/50-13	118/5)	0.43, 0.73	0.50	Spres W. 1	/ week	= 1695	),00	
T-7	151-14	1/15/51	0.50,0.50	8117:20					
,	151-15	1/22/5/	0.7,0.5	- Lord 8	State Sent	2 weeks Soph late	B Chair / ion		
•	16/51-17	1/29/51	11, 1.3			7-2-51	44-43	1 1	HPK59-22
		2/6/51	-0.97, 0.26		7-11-51-39	7-16-57	3.1-2.8	1-2-52 MF	K-60-3-
		2/12/51	0-0		2-18-51-40	7-25-50	1.8-0.4	1-10-52 HPA	-61
		2/19/51	2.8-1.4		7-10-51 41	8-1-51	3.6-2.7	1-10-52 H PA	
		2/26/51	0.6 -0.4		8-1-5142	Rum 3-6-57	4,7 -3,1		
		3/5/51	0.7		•	8-15-51	1		
		3/12/57	0.45	:		8-27-51			
1		3/19/51	9.6-12.0		7-28-51-4	9-6-51	6.5 5.8		
	7	4/2951	1.9-00		9-6-51-46	1-13-51	7.0 - 7.0		
1 7.	, ,	4/30/57	1.3-14		9-14-51-47	9-19-51	4.3-3.6		•
		4/7/51	1		9-245748	10-1-51	4.3-6.1		
		4/18/5/	1.3 -0.1		10-3-51-4	10-10-51	6.0-45		
4//	19/5/ 29	4/25/51	0-0		10-10-51-50	10-17-57	6.8-7.8		
4/2	5/5/30	5/1/51	3.7-1.4		10-19-51-5	10-23-5	1 5.9 - 5.5		
5/2	151 31	5/7-51	2.6-3.0		10-24-51-52	10-30-51	26-2.5		
	79/32		0.9 1.9		11-1-51-5	3 11-7-51	3.4-2,0		
	-1					11-21-51			
5	31/34	6-12-51	3.93-386	5		3 11-20-51			
	-13 135		343 38			12-5-5]			-102-
6	-20-96	6-20-5	7.4-33		17-5-51-5	7 12-12-57	32-3.9		
		11.20.01	82 90		112-12-51-58	12-21-57	130 00	1	

File. PM

#### RADIOACTIVITY ANALYSIS REPORT

File No	9 <b>12</b> J	
Issued		
	male Water	,

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HP <b>K-</b> 25-160	±	17,173±	
	<u>.</u> <u>±</u>	±	
	. ±	±	
	<u></u>	±	·
	±	±	
	±	±	
	<u>±</u>	±	
	± .	<u>+</u>	
	<u>±</u>	<u>±</u>	
	±	±	
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	±	<u>±</u>	·
	±	±	
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APPROVED: ac Flynn -103-

File No.	ીટા	
Issued_	30 00 51	
Turns of	comple Ster	

TO: Mr. Becher: K-1004-B-114, K-25 NO

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
IEK-25-159	<u>±</u>	52,026 <u>t</u>	Per 100 nl water.
	±	±	
	<u>+</u>	±	
	<u>+</u>	±	
·	±	±	
	土	±	
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APPROVED: aR Hymn

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#### RADIOACTIVITY ANALYSIS REPORT

File No	9 <b>12</b> J
Issued_	12-10-54
-	Sample Tater

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Betα Cts/min.	Remarks
HPK-25-158	±	8,889±	
	±	±	
	<u>+</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	<u>+</u>	±	
	<u>±</u>	±	
_	<u>+</u>	± .	
	± ·	<u>+</u>	·
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	. ±	±	
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	±	±	
	±	<u>±</u>	
·	<u>±</u>	<u>±</u>	
	<u>±</u>	±	
	<u>.</u> ±	±	
	±	±	
	<u>+</u>	<u>+</u>	
	±	± .	
	±	<u>±</u>	
	±	±	
	±	±	
	±	± ,,	

- 1. The limit of error at the 95% certainty level has been estimated from the precision of control samples.
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APPROVED: AR Flynn

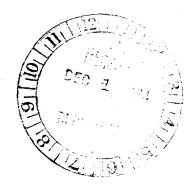
-105

File No	9 <b>12</b> J	
Issued_	77 06 51	
	Sample Water	•

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
IPK-25-157	<u>+</u>	9694 ±	
	±	±	
·	<u>±</u>	<u>±</u>	
	<u> </u>	±	
	<u>±</u>	±	
	± .	<u> </u>	
	<u>±</u>	±	
	± '	±	
	±	<u>±</u>	
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	±	±	

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APPROVED: AR Hynn

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#### RADIOACTIVITY ANALYSIS REPORT

File No	912J	
Issued	11 <b>-</b> 23 <b>-</b> 54	
Type of Sam	nle Water	

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Betα Cts/min.	Remarks
HPK-2 <b>5-</b> 156	<u>+</u>	10,684±	
	±	±	
	<u> </u>	<u>±</u>	
	<u>+</u>	±	
	±	· ±	
	±	±	
	±	±	
	±`	±	
	<u>+</u>	±	
	±	· · ± ·	
	<u>±</u>	±	
	<u>+</u>	±	
	±	±	
	±	±	
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	. <b>±</b>	±	
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	±	±	

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APPROVED: AR Hynn

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#### RADIOACTIVITY ANALYSIS REPORT

File No	9 <b>12</b> J		
Issued_	8-27-5	4	
	Sample_		

XXXXXXXXXX

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta	Remarks
Number	Cts/min.	Cts/min.	
HPK-25-150	<u>+</u>	18,362±	per 100 ml. water
	±	<u>+</u>	
·	±	<u>±</u>	
	<u>.</u> ±	±	
	<u>±</u>	±	·
·	±	±	
	<u>±</u>	<u>+</u>	
	± `	<u>±</u>	
	±	±	
	±	<u>+</u>	:
	±	±	
	<u>.</u> ±	<u>±</u>	·
	±	±	
	±	±	
	<u>±</u>	<u>±</u>	
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	±	±	

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APPROVED: aR Flynn -1

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#### RADIOACTIVITY ANALYSIS REPORT

File No.	<u>912J</u>	
Issued_	9-3-54	
	Sample Water	

TO: Mr. Becher: K-1004-B-114. K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-151	<u>±</u>	12,091±	per 100 ml water
	<u>±</u>	<u>±</u>	No. 1, 234 (200 )
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
	±	<u>+</u>	
	±	<u>+</u>	
	±	±	
***	<u>+</u> '	. <u>±</u>	
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	± .	± .	
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	±	· ±	
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	<u>±</u>	±	
	<u>±</u>	±	
	±	<u>±</u>	·
	±	<u>+</u>	
	±	±	
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	±	±	

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APPROVED: AR Flynn

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#### RADIOACTIVITY ANALYSIS REPORT

File No. 912J

Issued 9-17-54

Type of Sample Water

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-152	±	16,966±	per 100 ml water
	<u>+</u>	±	
	<u>±</u>	±	
	<u>±</u>	<u>+</u>	
	±	±	
	<u>+</u>	±	
	<u>+</u>	<u>±</u>	
	<u>+</u> '	±	
	±	±	
	±	±	
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	±	± .	
	±	±	

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APPROVED: al Hymn

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# RADIOACTIVITY ANALYSIS REPORT

File No. 912J
Issued 9-29-54
Type of Sample Water

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
IPK-25-153	<u>±</u>	14,684 <u>+</u>	Per 100 ml
	±	±	
	±	<u>.</u> ±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	<u>+</u>	·
	±	±	
	±	±	
	±	±	
	<u>.</u>	±	
•	<u>±</u>	<u>±</u>	
-	±	±	
	±	±	
	±	±	
•	±	±	
	<u>±</u>	±	
	±	<u>±</u>	
	±	±	
	±	±	
)	±	±	

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File No.	912J	
	10-14-54	
	Sample Water	

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-154	<u>+</u>	11,33&±	
	±	±	
	±	±	:
	<u> </u>	<u>±</u>	
	±	±	
	±	±	
	±	±	
	± `	±	
	<u>+</u>	±	
	±	<u>+</u>	
	±	±	
	±	±	
	±	±	
	<u>±</u>	<u>±</u>	
	<u>.±</u>	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	• ±	±	
	±	±	
	±	±	
	±	±	

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APPROVED: approved: -11

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#### RADIOACTIVITY ANALYSIS REPORT

File No	91	L2J	
Issued		)-28-54	
Type of			

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-155	<u>±</u>	11,292±	
	<u>+</u>	±	
	<u>±</u>	±	
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	±	
	±'	±	
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	· ±	±	
	<u>±</u>	÷	
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
	<u>±</u>	±	
	<u>±</u>	±	
	±	<u>±</u>	
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	<u> </u> ±	±	
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APPROVED: AR Hymn

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File I	No.	912J		
Issue		0 77 51	+	
		Sample_	Water	

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-149	<u>±</u>	14,976±	per 100 ml water
	<u>±</u>	<u>+</u>	
	<u>±</u>	±	
	<u>±</u>	±	to the second se
	<u>+</u>	±	
	<u>±</u>	<u>±</u>	
	±	<u>+</u>	
	± '	±	
	<u>+</u>	±	
	±	±	
	±	<u>+</u>	
	. <u>±</u>	<u>±</u>	
	±	±	
	<u>±</u>	<u>±</u>	
,	<u>±</u>	±	
	<u>+</u>	<u>±</u>	
	<u>±</u>	<u>+</u>	
	±	±	
	±	±	
	±	<u>±</u> .	
	±	±	
	±	<u>±</u>	
	±	±	

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D: AR Flynn -114-

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# RADIOACTIVITY ANALYSIS REPORT

File No.	9 <b>12</b> J	
	7-26-54	
	Sample Water	

# TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-147	<u>±</u>	22674±	per 100 ml water
	±	<u>+</u>	
	±	±	
	<u>±</u> .	±	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	<u>+</u>	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	±	±	
	±	<u>±</u>	
100	±	<u>±</u>	
	<u>+</u>	±	
	±	<u>+</u>	
	±	±	
	±	±	
	±	±	
-	±	<u>±</u>	

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File No	9 <b>12</b> J
Issued	7-20-54
Type of Sam	nle Water

# TO: Mr. A. F. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Betα Cts/min.	Remarks
HPK-25-146	±	2270½	per 100 ml water
	±	±	
	±	±	
	<u>+</u>	±	
	<u>±</u>	±	
	<u>+</u>	±	
	±	±	
	±'	±	(1) Th
	±	± (	
	±	± (2)	JIII . 1374 17.
	<u>+</u>	±	DEPARTE A
	<u>.</u> ±	±	
	±	±	720197
	±	±	
	±	<u>±</u>	
	<u>±</u>	±	
	±	<u>+</u>	
·	<u>+</u>	±	
	±	± ±	
	± .	±	
	±	±	
	±	±	
•	±	±	

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APPROVED: af Hynn -116-

File N	lo. <u>912J</u>	
	7-2-	
	f Sample	 

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-145	<u>±</u>	19,604	Rev100 ml
	<u>±</u>	±	
	<u>±</u>	<u>+</u>	
	<u>±</u>	<u> </u>	
	±	<u>+</u>	
	±	±	
	±	<u>±</u>	
	± `	±	
	<u>+</u>	±	
	±	±	
	<u>+</u>	±	
	<u>±</u>	±	
	±	<u>±</u>	
	±	±	
	±	<u>±</u>	
	+	<u>±</u>	
	<u>+</u>	<u>±</u>	
-	±	<u>±</u>	
	±	±	
	±	±	
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	±	±	
	±	±	

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APPROVED: OR Flynn -117-

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#### RADIOACTIVITY ANALYSIS REPORT

File No.	9 <b>1</b> 2J	4
Issued_	0 ( -1.	
	Sample <u>Water</u>	

TO: Mr. Becher: K-1004-B-114, K-25 RC

	T: K-1004-B-1	Betα	Remarks
Sample Number	Alpha Cts/min.	Cts/min.	Remarks
HPK-25-148	±	21 <b>,</b> 181 ±	per 100 ml. water
	±	<u>±</u>	50 g 4 1 3 4 4
	±	<u>±</u>	
	<u>+</u>	±	
	±	±	
	±	±	
	<u>+</u>	±	
	± `	±	
	±	±	
	±	±	
	±	±	
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	<u>+</u>	±	
	±	±	
	±	<u>±</u>	
	<u>±</u>	±	
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
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	± ±	±	
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APPROVED: a R Hynn

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#### RADIOACTIVITY ANALYSIS REPORT

File No.	9 <b>12</b> J	
Issued	5-17-54	
	Sample Water	

# TO: Mr. Becher; K-1005 Files, K-25 RC

Sample Number	Alpha Cts/min.	Betα Cts/min.	Remarks
HPK-25-141	±	£04و 25	
	±	±	
	<u>+</u>	· ±	
	<u>±</u>	±	
	±	±	
	<u>+</u>	±	
	±	±	
	± '	<u>+</u>	
	<u>+</u>	<u>±</u>	
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	±	± .	
	±	±	
	±	<u>±</u>	
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
	土	±	
	±	<u>+</u>	
	<u>±</u>	<u>+</u>	
	±	<u>±</u>	
	± ·	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	

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#### RADIOACTIVITY ANALYSIS REPORT

File No.	912J		ċ
Issued_		<b>1</b>	
		Water	•

TO: Mr. Becher, K-1004- B-114, K-25 RC

Sample Number	Alpha Cts/min.	Betα Cts/min.	Remarks
нрк-25-114	<u>±</u>	19 <b>,</b> 585±	
	±	<u>±</u>	
	土	<u>+</u>	
	±	±	
	<u>±</u>	<u>±</u>	
	±	<u>+</u>	
	±	<u>+</u>	
	± <b>'</b>	±	
	±	±	
	±	±	
	±	<u>±</u>	
	<u>.</u> ±	<u>±</u>	
	<u>±</u>	±	
	±	<u>±</u>	
	<u>±</u>	±	
···-	<u>±</u>	<u>+</u>	
	±	<u>±</u>	
	±	±	
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	±	±	
	±	±	

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APPROVED: AR Hynn

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File	No.	91 <b>2</b> J	
Issue	d	6-9-54	
		Sample <u>Water</u>	

# TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
нрк-25-143	_ ±	25,418±	Per 100 ml Water
	±	±	
	±	<u>+</u>	
	±	<u>±</u>	
	<u>+</u>	±	
	<u>+</u>	±	·
	±	±	
	± '	±	
	±	±	
	±	±	
	±	<u>±</u>	
	<u>±</u>	<u>+</u>	
	<u>±</u>	±	
	± ±	<u>±</u>	
	<u>+</u>	<u>±</u>	
<u> </u>	±	±	
	<u>+</u>	<u>±</u>	
	±	± ±	
	±	±	
	±	±	
	±	±	
	±	<u>±</u>	
	±	±	

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APPROVED: a R Flynn -121-

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#### RADIOACTIVITY ANALYSIS REPORT

File No. 912J

Issued 5-27-54

Type of Sample Water Sample

TO: Mr. Becher; K-1004-B-114, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
нРК <b>-</b> 25 <b>-1</b> 1; <b>2</b>	<u>±</u>	28,393	per 100 ml.
	<u>+</u>	<u>+</u>	
	<u>+</u>	<u>+</u>	
	±	±	
	<u>±</u>	±	
	<u>±</u>	±	
	±	±	
	<u>±</u> .	±	
	<u>±</u>	<u>+</u>	
	±	±	
	±	±	
	<u>.</u> ±	<u>+</u>	
	<u>+</u>	<u>+</u>	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	±	<u>±</u>	
	±	. ±	
	±	±	
	±	±	
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	±	±	
	±	±	

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APPROVED: a.R. Hynn

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File No. 912J
Issued 5-7-54
Type of Sample Water

TO: Mr. Becher; K-1005 Files, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
нРК-25-140	<u> </u>	40,093	
	<u>±</u>	±	
	<u>+</u>	±	
	±	<u>±</u> .	
	±	±	
	<u>±</u>	±	
	±	±	
	± ·	±	
	±	±	
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
	. ±	±	
	±	<u>+</u>	
	<u>±</u>	<u>±</u>	
	±	±	
	±	±	
·	±	±	
	±	<u>±</u>	, the same of the
	±	±	
	±	<u>±</u>	
	±	±	
	±	<u>+</u>	
	±	±	

- The limit of error at the 95% certainty level has been estimated from the precision of control samples.
- 2. The alpha counting rates have been corrected to 50% geometry by comparison of results obtained by counting unaltered uranium with the published alpha specific activity.
- 3. The beta counting rates have been corrected to 100% geometry by comparison of results obtained by counting unaltered uranium with the published specific beta activity of normal uranium.

APPROVED: AR Hynn -123

post

File	No.	9 <b>12</b> J
Issue		1 00 -1

Type of Sample Water

TO: Mr. Becher; K-1005 Files, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK <b>-1</b> 39	±	7581 ±	
	<u>+</u>	±	
	<u>+</u>	±	
	<u>±</u>	<u>+</u>	
	<u>±</u>	±	
	<u>±</u>	±	
	±	±	
	± `	<u>+</u>	
	<u>+</u>	<u>+</u>	
	±	±	
	±	±	
	. ±	<u>±</u>	
	±	±	
	±	<u>±</u>	
	<u>±</u>	<u>+</u>	
	<u>+</u>	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	<u>+</u>	±	
	±	±	
	±	<u>±</u>	

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APPROVED: C. R. Flynn

pute

File No	912J	
Issued_	4/19/54	
	Sample Water	

TO: Mr. Becher; K-1005 Files, K-25 RC

O: Mr. Becher; K-1005 Files, K-25 RC				
Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks	
нрк 138	<u>±</u>	562l <sub>l</sub> ±	per 100 ml water	
<del></del>	土	<u> </u>		
	±	<u>+</u>		
	±	±		
	<u>+</u>	±		
	<u>±</u>	±		
	±	<u>±</u>		
	± '	±		
	<u>±</u>	<u> </u>		
	±	±		
	±	±		
	. ±	±		
	<u>+</u>	<u>+</u>		
<del></del>	<u>+</u>	<u>+</u>		
	<u>±</u>	<u>±</u>		
	±	<u>±</u>		
	±	±		
	±	<u>+</u>		
	<u>+</u>	±		
	±	±		
	±	±		
	±	± .		
	± .	±		

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APPROVED: AR Hynn -12

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#### RADIOACTIVITY ANALYSIS REPORT

File No	<u>9</u> 12J	
Issued_	1. / R / E).	Ì
Type of	Sample Water Sample	

TO: Mr. Becher; K-1005 Files K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-137	<u>.</u>	3827 ±	per 100 ml.
	<u>±</u>	<u>+</u>	
	<u>±</u>	<u>+</u>	
	<u>±</u>	<u>+</u>	
	<u>+</u>	±	
	<u>±</u>	<u>±</u>	
	±	±	
	± '	±	
	±	<u>+</u>	
	±	±	
	±	±	
	± .	±	
	±	±	
	<u>±</u>	±	
	±	<u>±</u>	
	±	<u>±</u>	
	±	±	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	±	±	

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APPROVED: aR Hymn -126-

911

#### RADIOACTIVITY ANALYSIS REPORT

File No. 912 J
Issued 3/18/54
Type of Sample Water

TO: Mr. Becher; K-1005 File, K-25RC

Sample Number	Alpha Cts/min.	Beta . Cts/min.	Remarks
HPK-25-135	7050 ±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	<u>+</u>	<u>+</u>	and the second s
	±	±	
	±	±	
	±	±	
	± '	<u>±</u>	
	±	<u>+</u>	
	±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	±	
	±	<u>±</u>	
	<u>+</u>	ı. ±	
	<u>±</u>	, ±	
	<u> </u>	±	
	± /	±	
	<u>+</u>	±	
	±	±	
	±	±	
i	±	± ,	

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APPROVED: AR Hymn

-127

pox

File No. 9/2 Y
Issued 3-36-54
Type of Sample Zelater

TO: Mr. Becker: K-1005 Files K-25 Re

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
4PK-25-136	<u>±</u>	9911±	per 100 ml in
	±	±	/
	<u>±</u>	<u>+</u>	
	<u>+</u>	<u>+</u>	
	<u>+</u>	<u>+</u>	
	<u>±</u>	<u>±</u>	
	±	±	
	±	±	
	<u>+</u>	<u>±</u>	
	±	±	
	±	±	
	<u></u> ±	±	
	±	±	
	±	±	
	<u>±</u>	<u>+</u>	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	±	<u>±</u>	
	±	± ±	
	±	±	
	±	±	
	±	±	

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APPROVED: AR Flynn -

-128-

(7H)

#### RADIOACTIVITY ANALYSIS REPORT

TOTAL Becker; central files, N. 25 R.C.

Sample		Beta	
Sample Number	Alpha Cts/min.	Cts/min.	Remarks
HPK25-104	<u>±</u>	13,559	Renioral water
	±	, ±	
	±	±	
	±	±	
	±	±	
	±	<u>+</u>	
	±	±	
	±`	<u>±</u>	
	±	± ±	
	± ·	Ι	
	±	±	
	±	<u>±</u>	
	±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	±	±	
	<u>±</u>	<u>±</u>	
	±	±	
	±	±	
	±	±	
	±		
		, ±	
	<u>+</u>	±	
<b>,</b>	±	±	

File No. 9125
Issued 4-15-53
Type of Sample Water Sample

- The limit of error at the 95% certainty level has been estimated from the precision of control samples.
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APPROVED: Frank & Voss -129-

pH -

File No.	. 912 J	
Issued_	$\sim 11/1$	
Type of	Sample Water	

13

TO: Mr. Becher; Central Files, K-25 RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-101	±	16,61 <u>7</u>	per 100 ml. wate
	±	<u>+</u>	
	±	±	
	<u>+</u>	<u> </u>	
	±	±	
	±	±	
	±	±	
	± `	±	
	<u>±</u>	±	
	±	±	
	±	±	
	±	<u>±</u>	
	±	<u>±</u>	
	土	±	
	±	<u>+</u>	
	· ±	<u>±</u>	
	±	±	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	<u>+</u>	±	

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APPROVED: Frank 8. Nos -130-

both

TO: Mr. Becher; Central Files, K-25 RC

File No.	912 J	
Issued	3/26/53	
Type of S	Sample <u>Water</u>	
	a <del>7</del>	

Sample Number	Alpha Cts/min.	Betα Cts/min.	Remarks
HPK <b>-</b> 25 <b>-1</b> 02	±	26857±	Per 100 ml. water
	<u>±</u>	<u>±</u>	
	<u> </u>	±	
	±	<u>+</u>	
	<u>±</u>	±	
	±	±	
	±	±	
	± ·	±	
	±	±	
	±	±	
	±	<u>±</u>	
	. ±	±	
	±	±	
	<u>+</u>	<u>±</u>	
	<u>±</u>	±	
	<u>±</u>	±	
	±	<u>+</u>	
	<u>±</u>	<u>±</u>	
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	±	· ±	
	±	±	
·	±	±	
	±	±	

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APPROVED: Frank S. Voss

-131-

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#### RADIOACTIVITY ANALYSIS REPORT

File No. 912 J
Issued 12/1/53
Type of Sample Water Samples

TO: Mr. Becher; Central Files, K-25RC

O: Mr. Becner; Central Files, A-2)RC  Sample Alpha Beta Remarks Number Cts/min. Cts/min.			
Number	Cts/min.	Cts/min.	
HPK-25-125	±	14,838	per 100 ml.
	±	<u>±</u>	
	<u>+</u>	<u>+</u>	
	<u>±</u>	±	
	±	±	
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
	± `	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	<u>+</u>	·
	±	, ±	
	±	<u>±</u>	
	±	<u>±</u>	
	±	<u>±</u>	
	±	±	
·	<u>±</u>	<u>+</u>	
	±	±	
	±	±	
	<u>±</u>	±	
	±	±	
1	±	±	

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APPROVED: AR Hynn -13

Special stration Solution

File No	912			
Issued_	3/12,	754		
Type of	Sample_	Water	Sample	

TO: Mr. Becker; K-1005 File; K-25RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
V.O.L.I.	<u>±</u>	4002 <sub>±</sub>	per 100 ml.
	±	±	
	<u>±</u>	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
·	±	±	
	±	±	
	±	±	
	±	±	
	<u>±</u>	<u>+</u>	
	<u>±</u>	<u>±</u>	
	<u>+</u>	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	· ±	
	<u>±</u>	±	
	<u>±</u>	土	
	±	±	
	±	±	
	±	±	
	±	±	
	±	±	

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APPROVED: AR Hymn -133-

304.

# RADIOACTIVITY ANALYSIS REPORT

File No	912 J	
Issued_	3/8/54	
Tune of	Sample Water	

TO: Mr. Becher; K-1005 File, K-25RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-134	土	4147 ±	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	±	<u>±</u>	
	<u>±</u>	<u>+</u>	
	±	±	
	±	±	
	±`	±	
	<u>+</u>	±	
	±	<u> </u>	
	±	<u>±</u>	
	±	±	
	<u>+</u>	±	
	±	±	
	±	±	
	<u>±</u>	±	
	±	<u>+</u>	
<del></del>	±	±	
	<u>+</u>	±	
	<u>±</u>	±	
	±	±	
	±	±	
	±	±	

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APPROVED: AP Flynn -134

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# RADIOACTIVITY ANALYSIS REPORT

File No	912 J	
Issued_	2/26/54	
	Sample Water	

TO: Mr. Becher; K-1005 File, K-25RC

	er; <b>E-1</b> 005 Fil		_
Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-133	<u>±</u>	9768 <sub>±</sub>	per 100 mk. water
	<u>±</u>	±	
	±	<u>+</u>	
•	±	<u>±</u>	
	± `	±	
	<u>+</u>	<u>±</u>	
	±	±	·
	<u>±</u>	±	
	±	±	
	± ±	<u>±</u>	
··································	±	±	
	<u>±</u>	<u>±</u>	
· · · · · · · · · · · · · · · · · · ·	±	<u>±</u>	
	± ±	<u>±</u>	
	<u> </u>	±	
	±	±	
	±	±	
	±	±	
	±	±	
	±	<u>±</u>	

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APPROVED: APPROVED: 135-

# Box

#### RADIOACTIVITY ANALYSIS REPORT

File No.	912 J	
Issued_	0/20/51	
	Sample Water	

TO: Mr. Becher; Central Files, K-25RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-132	±	11626 <sub>±</sub>	per 100 ml. wate
	<u>±</u>	<u>+</u>	
	<u>±</u>	<u>+</u>	
	<u>±</u>	±	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	±	<u>±</u>	
	± '	±	
	<u>+</u>	<u>±</u>	
	<u>±</u>	±	
	<u>±</u>	<u>±</u>	
	. ±	<u>±</u>	
	±	±	
	±	±	
	±	<u>±</u>	
	<u>±</u>	<u>+</u>	
	<u>±</u>	±	
	±	<u>±</u>	
	±	±	
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	<u>'</u> ±	±	
	±	±	
	<u>±</u>	±	

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APPROVED: a.R. Flynn

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from/

#### RADIOACTIVITY ANALYSIS REPORT

File No.	912 J	
Issued_	2/12/54	
	Sample Water	

TO: Mr. Becher; Central Files, K-25RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK <b>-</b> 25 <b>-</b> 131	<u>±</u>	7270 <sub>±</sub>	per 100 ml. water
	±	<u>+</u>	
	±	±	
	±	<u>+</u>	
	±	±	
	±	<u>±</u>	
	土	±	
	± '	±	
	±	±	
	±	<u>+</u>	
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	<u>±</u>	±	
	±	±	
	<u>+</u>	±	
	±	±	
	±	±	
	<u>±</u>	±	
	<u>+</u>	±	
	±	±	
	±	±	
	±	±	

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APPROVED: AR Hymn -137-

B11

File No. 912 J
Issued 2/3/54
Type of Sample Water Sample

TO: Mr. Becher; Central Files, K-25RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25- <b>1</b> 30	±	4644 <sub>±</sub>	per 100 ml. water
	±	<u>+</u>	
	±	±	
	<u>±</u>	<u>±</u>	
	±	±	
	±	±	
	±	±	
	± `	±	
	±	± -	
4	±	±	
	±	<u>+</u>	
	<u>±</u>	<u>+</u>	
	<u>±</u>	<u>±</u>	
	±	<u>+</u>	
	± ±	± ±	
	±	<u>:</u> ±	
	±	±	
	±	<u>±</u>	
	±	±	
	±	±	
	±	±	
	±	±	

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APPROVED: AR Hymn

-138-

pob

File No. 912 J
Issued 1/21/54
Type of Sample Mater

TO: Mr. Becher; Central Files, K-25RC

Sample Number	Alpha Cts/min.	Beta Cts/min.	Remarks
HPK-25-129	<u>+</u>	10,059 <sub>±</sub>	per 100 ml. water
	±	<u>±</u>	
	<u>+</u>	<u>±</u>	
	<u>+</u>	<u> </u>	
	±	<u>±</u>	
	<u>+</u>	<u>+</u>	
	土	±	
	± ·	±	
	±	<u>±</u>	
	±	±	
	±	<u>±</u>	
	<u>±</u>	<u>±</u>	
	<u>±</u>	<u>+</u>	
	±	<u>+</u>	
	±	<u> </u>	
	<u>±</u>	±	
	±	<u>±</u>	
	±	<u>±</u>	·
	±	<u> </u>	
	<u> </u>	±	
	± .	± ,	
	± ±	± ±	

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APPROVED: AR Hym

-139 -